

**The Importance of Handwriting:
How Montessori Didactic Materials support
Handwriting**

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Abstract

The Importance of Handwriting; How Montessori Didactic Materials support Handwriting

In this high-tech age, handwriting in modern society is at a decline; this is true in education as well. The Common Core ignores the importance of handwriting; Montessori curriculum highlights the importance of writing skills. Handwriting has been shown to boost brainpower, aid in memory, improve motor skills as well as become a gateway to reading. This study was done to discover what classroom strategies support the development of handwriting in a mixed age class and to gain insight into what benefits result for the child in learning this skill. This action research project was conducted in a Montessori preschool in a Midwest city area. Twenty preschool participants ages 2 ½ to 5 years old were studied and evaluated over an 8-month period of time. The Montessori didactic materials, which have been used in Montessori classrooms for over a hundred years, were used to teach handwriting. In addition, writing was added to other subject areas to further encourage writing work. Observation, photographs, small-group presentations, student and parent interviews and handwriting samples were used to compile data. The results were positive. Students grew in handwriting ability and they chose handwriting works on their own. The Montessori materials proved effective; however they were even more effective when combined with a whole Montessori approach. This includes the preliminary works done in Practical Life and Sensorial to strengthen the hands and develop concentration and coordination. Parents also noticed a change in their children's handwriting and believed that Montessori materials were

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beneficial. As modern education moves away from handwriting instruction this study shows that handwriting is still essential and necessary for the whole education of the child and can be readily integrated into an early childhood curriculum.

Keywords: Montessori, handwriting, writing, emergent writing, differentiation, Common Core, brain, memory, Practical Life, Sensorial, composition, keyboarding

Introduction

As a Montessori Children's House teacher, for students aged 2 ½ to 6, I have discovered that teaching handwriting is a passion of mine. In my classroom I observe the excitement children display when they write their name for the first time and then progress to writing letters. They move onto copying words and sequences of letters from their environment. This ultimately leads to a time when they are writing constantly; it is all they want to do. Montessori called this the "explosion of writing". After this, they discover that these words, groups of letters, have meaning. They begin to learn to read their writing and then the words around them. Angeline Lillard described it as such:

Obviously children also see others learn to write in traditional schools; what is unique in Montessori is the series of steps, all visible and imitable, that lead children along the path to writing, so that a community of 4-year-olds can discover they already have the ability to write once they see it done by another child. (Lillard, 2007, p. 198)

This experience that handwriting brings to the classroom involves the whole room, as they learn together, discover the literary world around them and come to a knowledge that will be with them for the rest of their lives.

I was disturbed then to read about the lack of importance placed on this skill in the introduction of the Common Core, a set of standards that has been recently adopted by numerous states. The thought that such a useful skill, which connects the work of our hands to higher academic function, would be obsolete is astounding. I set forth to look into whether or not handwriting was still viewed as a useful skill by current educators and

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researchers. Is it relevant in this age when so many people do not even pick up a pen daily, when the power of the keyboard reigns? Do we still need to learn how to write?

Literature Review

In this age of technology, computer skills are generally utilized most and the seeming need for handwriting instruction appears to lessen. However, handwriting is still a relevant and essential skill. In the Montessori Classroom handwriting is still thriving. The importance of this skill of the hand is numerous. Handwriting aids in the development of the brain (Klemm 2013; Seton 2012). It enhances memory and motor skills. Writing early in life is leading to reading. Handwriting is also a prerequisite for keyboard and fluent reading. Practice in the early years helps students to create written compositions later. Finally, handwriting leads to independence and flexibility. How could The Common Core, the new standard for curriculum, and the public in general overlook such an important tool (Education Week, 2012, p.1)? Handwriting is a necessary skill for the educational and physical well-being of the child. As demonstrated in the Montessori classroom, handwriting is an essential building block for the child's complete development.

Brain Benefits

Handwriting is beneficial for the brain. It has been suggested that handwriting may activate brain activity in young children (Education Week, 2012, p.2). For the brain to reach its "optimal efficiency" it is necessary to learn handwriting (Klemm, 2013, p. 1). When a student is writing it has been shown that "multiple areas of the brain become co-

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activated during the learning of cursive...as opposed to typing or just visual practice” (Klemm, 2013, p. 1). The brain is not just charged, or activated; it forms connections that offer high level thinking skills. Brain scans have revealed that children exhibit processing that is almost adult-like when they are writing, as opposed to when they are typing (Education Week, 2012, p.2). How could we ignore such a beneficial skill? Furthermore, when a child is taught to write in a way that is active rather than passive, his/her brain is impacted and their writing legibility and fluency will be enhanced (Seton, 2012, p. 3). In addition, cursive has even more brain benefits. Cursive writing helps “train the brain to integrate visual, and tactile information, and fine motor dexterity” (Klemm, 2013, p. 2). These benefits on the brain make learning handwriting seem completely essential.

Motor Development Benefits

Handwriting helps a child develop crucial motor skills. Preschool is an opportune time, in the development of a child, to teach fine motor skills. One of these skills that is commonly taught at this age is handwriting. “Learning handwriting has both cognitive and motor benefits” (Education Week, 2012, p. 1). Handwriting is an important way to hone and develop these fine motor skills. It is a combination of complex movements. It includes visual perception, fine motor skills and the development of cognition (Stevenson & Just, 2012, p. 50). Young children are very sensitive to movement, therefore in this developing stage, “every time the child forms a letter, the movement is becoming automatic: practice makes permanent” (Woods, 2001, p. 41). This is a skill that needs to be maintained. If we don’t provide enough practice time, and even practice daily, it will “cause severe motor problems” in children (Education Week, 2012, p. 2). Just as with any other skill, if we don’t

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practice it, we will lose it. “Quality drops with the cessation of practice in all similar motor skills” (Enstrom, 1961, p.1). These fine motor skills cannot be drilled as a practice though. The teaching of them needs to appeal to the child, to call to them. It should not be a regimented practice, but one that the child wants to do. “The hand that wants to write and can write is the hand truly free to write” (Rambusch, 1962, p. 83). Motor skills are benefitted by handwriting practice, we need to make sure that we are also maintaining this skill with daily practice and letting the child enjoy and discover these benefits on his/her own.

Memory Benefits

Handwriting is a powerful tool that aids in Memory. Active activities like handwriting have been proven to help a child retain more, whereas passive activities like typing or tracing cannot promise the same results. “The instructional method affects how the child’s brain stores the memory” (Seton, 2012, p. 8). For young children the memorization of how to form letter shapes is key. Typing alone cannot teach this process. The practice of actually making the letter shapes by hand is needed to help the brain remember how to form the letters and duplicate them later. Typing is confusing to teach young children when they are beginning to write, because hitting a key on the keyboard has nothing to do with the actual shape or formation of a letter (Stevensen & Just, 2012, p. 53). Memory is also helped when a student takes notes by handwriting them. This process causes the student not to just write down words verbatim, but rather to analyze the words and synthesize them into a summary that they then write down. This extra processing helps the student better remember the subject on which they were taking notes on (Smoker et al.,

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2009, p.1744). This has also been shown to be true for word memorization. If the students write them, instead of merely studying them, they retain more. This is true with students learning to type as well. “The increased kinesthetic information from handwriting creates a more complex memory trace than by typing” (Smoker et al., 2009, p. 1746). In addition, it has also been said that when we do not teach handwriting, “reader comprehension may suffer” (Summit to make a Case for Handwriting, 2012). Without handwriting practice, many areas of a child’s academic growth are deterred. Handwriting is an excellent and necessary aid in increasing memory.

Name Writing Benefits

A child’s own name can be the gateway to further literacy. “One’s own name is arguably the most meaningful of all the experiences young children have with print” (Haney, 2002, p. 101). The identity of the child from birth is wrapped up in the name she is called. We must conclude that when the child has developed the motor skills to write; she will want to make this word that represents her. This name has been available to the child audibly and visually, in spoken and written form, for years and the ability to recreate it can be a catalyst for further interest in the notion that words have meaning that is personal. When handwriting and literacy in general become personal, they become more interesting and desirable. It is also suggested that, “information is most deeply processed (and thus better remembered) when it is highly meaningful to the individual” (Haney, 2002, p. 102). Young children write words that have letters that are consistent with their name. When studying children’s writing samples, it was found that “almost

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half of the characters that 4- and 5-year-old children included in writing samples were letters found in their own names” (Diamond, Gerde & Powell, 2008, p. 467).

How do we include name writing in the classroom? This can be done by having daily sign-in activities, or name works on the shelf that the student can trace, copy or duplicate. When the child has the tools to learn to write his own name, he will find this experience meaningful and the success in this activity will lead to other things. “Overall, the highly personal and meaningful nature of names seems the perfect vehicle for introducing new concepts such as letter sounds, letter names, and phonemic awareness” (Haney, 2002, p. 104). The writing of one’s own name can lead to further literacy and interest in the written word.

Early Writing Leads to Reading

When writing has been introduced at a young age, it leads to reading. “In Montessori programs, children learn to write before they learn to read, and reading follows spontaneously several months after writing has begun” (Lillard, 2007, p. 22). Modern research supports what Montessori observed many years ago. “The best predictors of later reading are print-related skills” (Diamond, Gerde & Powell, 2008, p. 468). In a writing study done by Diamond, Gerde and Powell, they noted that children who had more sophisticated writing were concurrently able to identify initial sounds in words. The results of this study suggest the classroom has what normally occurs in a Montessori classroom in the Language area; the students should be given many opportunities to write (which may include participating in labeling the classroom). They should be provided with a great variety of tools and materials that assist in the writing

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process, and they should have opportunities to write their names (Diamond, Gerde & Powell, 2008, p. 476). When given this prepared environment for Literacy exploration, it is not at all uncommon for children to learn to write and then just after, learn to read.

Keyboarding and Reading Benefits

Handwriting is also a necessary tool as a prerequisite to keyboarding and reading. It is not just essential on its own; it contributes to keyboarding and reading as well. For a student to be adept at keyboarding, they must first be able to write. “Handwriting and keyboarding are not mutually exclusive; rather keyboarding builds on the skills of handwriting” (Stevensen & Just, 2012, p. 54). It is safe to assume then that children who are successful at handwriting will be successful at typing as well. On the other hand, when students have difficulty with handwriting, some educators suggest that they should just move to a keyboard for practice, however it has been found that children that struggle with handwriting will have some of the same issues when they use a keyboard (Education Week, 2012, p. 2). The same holds true with reading practice as it relates to handwriting. When students become adept at handwriting, their reading fluency increases (Seton, 2012, p. 12). As the child writes, she is concentrating on that letter; often, she will also be focusing on the sound that letter makes, which is essentially practicing for reading fluency. Handwriting is a natural precursor to reading. Cursive writing is also beneficial for reading fluency. As the student writes and blends the letters together in one unending line, he focuses on the blending of the sounds. When the line stops, the word stops. Cursive writing is basically a physical representation of sounding out a word. How beneficial it must be to children that learn in the stereognostic or kinetic way to discover how to read this way

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(Seton, 2012, p. 17). In the Montessori classroom children learn to determine size and shape with a blindfold on, only using their hands, this is called using their stereognostic sense. As the practice indicates, it is apparent that handwriting is a prerequisite for keyboarding and reading fluency.

Benefits for Writing Composition

Also, handwriting is necessary for students to succeed at composition. To get students to write, teachers might start writing practice with daily journals or one minute timed writings (Phelan, 1975, p. 63). This gets the students thinking about composition. These activities will all be handwritten. Studies have shown that a student's ability level in handwriting activities like these affects their composition. "How well a person is able to write affects both the speed and the expression of one's thoughts and ideas" (Woods, 2001, p. 1). This is logical. If a student is successful at writing he will be able to write as his brain processes and it will not be slowed down by a lack of ability. This applies to keyboarding as well. "If working memory is needed for lower level tasks of handwriting or finding keys on a keyboard then students will be limited in their ability to engage in the many aspects of writing: idea creation, vocabulary selection, composition and revision" (Stevensen & Just, 2012, p. 49). In the United Kingdom, various compositions were graded and compared and it was discovered that those that were written by hand had a much higher standard of compositional quality than those that were typed (Stevenson & Just, 2012, p. 52). Also, a professor at the University of Washington, Virginia Berninger, studied elementary children in grades 2, 4, and 6 and discovered that "they wrote more words, faster, and expressed more ideas when writing essays by hand versus with a keyboard" (as cited by Klemm, 2013,

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p. 2). Composition is a needed skill in a child's future. Handwriting practice is a tool to help a child have more success in this area.

Independence and Flexibility Benefits

The practice of handwriting can lead to increased independence in activities that lead to improved literacy. A team of researchers, looking into writing independence discovered that, "when children were given a reasonable amount of freedom and responsibility for literacy activities, they demonstrated more motivated literacy behaviors" (Lamme, Fu, Johnson & Savage, 2002, p. 73). This is how Montessori writing takes place. The children are given the presentations or guidance on how to use the writing materials and then they can choose how often they want to do these activities and for how long. This independence leads to an intrinsic desire to write. The child is not forced to do writing work; they choose it on their own and do it because they desire to do it. With practice, this work becomes something they enjoy and often do. This practice, of not pushing children to write and not interfering with a child's writing process, "resulted in children who wrote more and were more independent writers at the kindergarten level" (Lamme, et al., 2002, p. 74).

Flexibility is also improved with writing practice. "Young children need the freedom to quit, to change, and to try different strategies for experimenting with written language" (Lamme, et al, 2002, p. 75). This group of researchers discovered that revision itself is a skill that needs to be taught. Not all children inherently know how to do this on their own. Teachers, Debbie and Julie, had to coach some of their students, such as suggesting when things were missing and asking if they would like to add more details.

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When the students followed through with this, their work became even more descriptive and detailed (Lamme, et al., 2002, p. 76). Writing is beneficial when taught in a way that shows children that they can change and revise and build-on the work they have already done. “There is a tremendous self-affirmation in the act of creating a piece in language, whatever the form” (Phelan, 1975, p. 65).

The Art of Integration

One of the ways that handwriting has been successfully incorporated into classrooms, especially in Montessori classrooms, is through the integration of writing with other subject areas. “As children pursue their interests and experiences, their skill development is integrated functionally” (Strickland & Morrow, 1990, p. 604). This appears in the Montessori classroom in a variety of ways. Children could be learning about the land and water forms and making a book with each form illustrated and labeled. In the Math area, a child could be writing down all the numbers from the Hundred Board in order from 1 to 100. In the Science area, a child could be drawing a lifecycle of a Monarch butterfly and labeling the distinct parts of the cycle. Maria Montessori herself taught students scientific names for plants and animals and had them write and diagram them (Montessori, 1979, p. 175). All of these activities include writing; However it is not direct writing practice with a pencil and a piece of paper. This kind of meaningful handwriting work through integration has been successful in the Montessori classroom for over a hundred years.

Summary of Literature Review

The art of handwriting is a way to communicate. It is personal and direct. However as the directives of the Common Core indicate, it has fallen from the forefront of education. This is a mistake because handwriting is essential for development of the brain and motor skills; it activates the memory; the writing of a child's name and early writing lead to literacy; handwriting is a prerequisite to keyboarding and reading and it is also necessary for quality composition and independence and flexibility in writing. Also, when integrated with other subject areas, handwriting becomes more meaningful and a more wholistic approach to educating. This necessary skill has been reduced to the background of educational studies. Its importance is clear, yet the push to elevate it in regards to other subject areas, such as math and reading and science, has not been made. Is the need for handwriting practice then diminished? Do we not realize the gravity of an education system without it? At a Summit to make a case for Handwriting in Washington D.C., Daniel A. Domenech, the executive director of the American Association of School Administrators, sums it up best as he talks about the debate on the worth of handwriting as parallel to the doubt people had about teaching math skills when calculators and computers became popular..."People wondered whether students needed to learn how to do math. The answer in both cases is absolutely yes. Writing is not obsolete" (Education Week, 2012, p. 1).

Purpose

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I had previously observed that the children in my classroom were not doing as much writing as I thought they could be. They often wrote names and addresses, however they rarely ventured into other types of writing work. I purposed to do an action research project that worked on developing writing skills.

The central question on which I focused my study was:

Are Montessori didactic materials effective in teaching handwriting to children of different ages and ability levels? I will also seek to answer these questions:

1. How can handwriting be incorporated in other subject areas in my classroom?
2. How can children be encouraged to take out handwriting works on their own?
3. Which handwriting works are the most popular and seemingly most effective?
4. Do the materials that promote handwriting in my Montessori classroom challenge students of varying ages and ability levels?

Handwriting was integrated in different subject areas in the classroom. I hoped that students would choose a variety of handwriting materials with which to work.

Method

Participants and Setting

I conducted this research in my own Children's House Preschool classroom. Participants in this study were 19 Preschoolers aged 2 ½ to 5 and one Kindergartener aged 5. In this classroom, 65% of the students are Caucasian, 20% are of Asian background, 5% are of Eastern European background, 5% are African American and 5% are Hispanic. The setting was a Montessori Children's House in a private Montessori school located in the Minneapolis metro area. The population of this school is approximately 100 Preschool

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students and 3 Kindergarteners in 4 Children's Houses. This school also has an infant room, a young toddler room and a Transition/toddler room.

Methodology

The methodology used was a qualitative study designed to prove that Montessori didactic materials are beneficial in teaching handwriting and effective in teaching handwriting to Preschool students of varying ages and abilities. The students in this Children's House participated through student interviews at the beginning and end of this project. They also allowed me to photograph them and take video of them while they worked. I collected data throughout the Montessori work times, noting which works were being used, which works were the most popular and the ratio of writing to non-writing works chosen (See Appendix B & C). I also randomly selected 4 individuals on whom to do case studies. The only parameters for these case studies that I set were that I must have one of each age (2, 3, 4, & 5). I wanted to show that handwriting in the Montessori room could be successful for children of all ages and abilities. I observed the writing and non-writing works that these students chose and assessed their progress through writing samples (See Appendix D).

Materials

I selected the materials in the Montessori classroom that are most used for writing:

- Metal insets
- Chalkboards/whiteboards
- Moveable alphabet

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Then I also included basic writing essentials that were most likely included in Montessori rooms as well.

- Pencil and paper
- Tracing work
- Objects/words
- Books
- Journals

One of the goals of my study was to incorporate and integrate other academic areas of the classroom as is traditionally done in the Montessori room. The materials that might be used in these areas for writing work include:

- 3 part cards
- map making/flag work
- animals from around the world books
- copy from original
- math works: teens board, tens board, hundred board, addition and subtraction strip boards, stamp game, snake games, etc.
- lifecycle objects and cards, parts of a plant, animal etc. books
- botany cabinet insets

Procedure

This study was done for eight months, from August 2014 to March 2015. In August students provided handwriting work samples. In September data collection began. Data was compiled each day. The handwriting works that students chose were noted and

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tallied. Approximately twice a week data was also collected in reference to all the works that were being done at that time, it was noted whether they were works that included writing or if they were non-writing works. In October students were given a writing survey. They were asked the following questions:

1. What do you like about writing work?
2. What is your favorite writing work?
3. What is your favorite letter to write? Favorite number?
4. What do you like to write about?

November through March was also spent gathering data on the writing works done in the classroom. The students that were part of the case studies were monitored as well. Data was compiled on which writing works they chose and writing samples were taken throughout this time. At the end of the study in March, students again were given the above writing survey. Parents were also given a survey to assess how they observed their child's writing change over time.

Incorporating writing in other subject areas

One of the goals of this study was to show that student writing can improve through integrated skills, not just focused writing works. It was my aim to try to include writing through all subject areas in the classroom. I began by showing the children presentations in the traditional way and then adding a writing component at the end. (See Figures 1-7).

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Figure 1. This is a photo of a student doing the artifact box of North America. Instead of just matching the label to the object as the original presentation suggested, we took it a step further and had the child write out labels of each card on a piece of writing paper.

Figure 2. Here is another example of our integrated approach; this child has laid out the three part cards for the lifecycle of a sea turtle. She has matched the appropriate objects to the corresponding cards. Then to again incorporate the writing, she was asked to write down the names of each stage. Here she writes down “hatchling”.



Figure 3. Here is an example of how writing can be integrated in the sensorial area. An older student has assembled the pink tower on her rug. She has been instructed to draw the pink tower on her paper and write a sentence about it. She wrote, “The pink tower is pink. It gets taller and taller.”

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Figure 4. This is another sample of integrating writing. These three part cards of the metal inset shapes have been laid out and matched. Then the student has then written down all of the shape names.

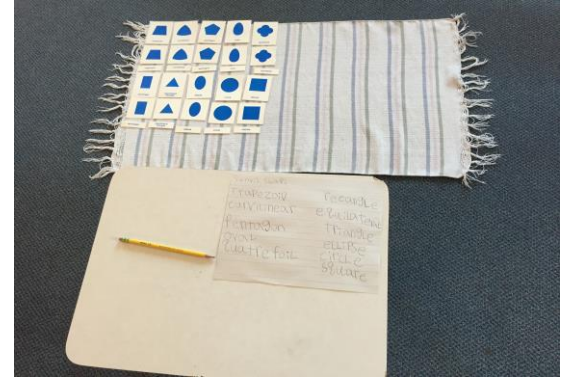


Figure 5. This student decided to write about the state of Mississippi with cards of state facts and writing paper.

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Figure 6. This is an example of integration with Math work. The Hundred board was being used by another student, so this child chose to use a printout of the hundred board as a guide to write from 1 to 100 on

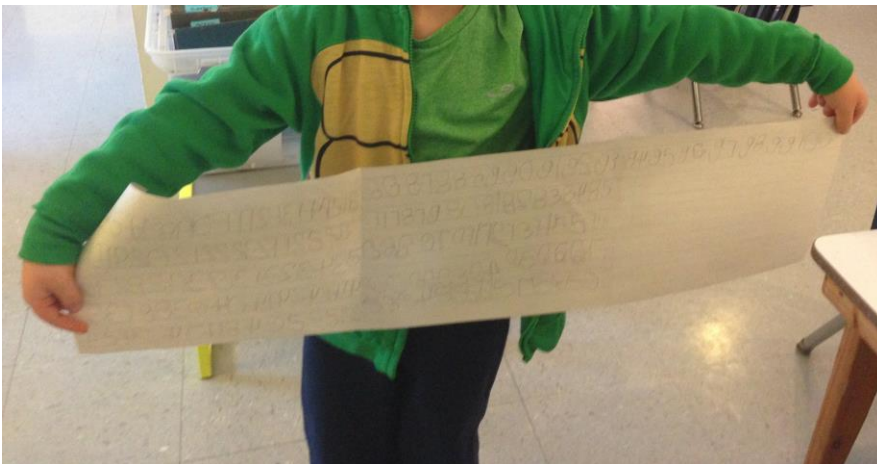
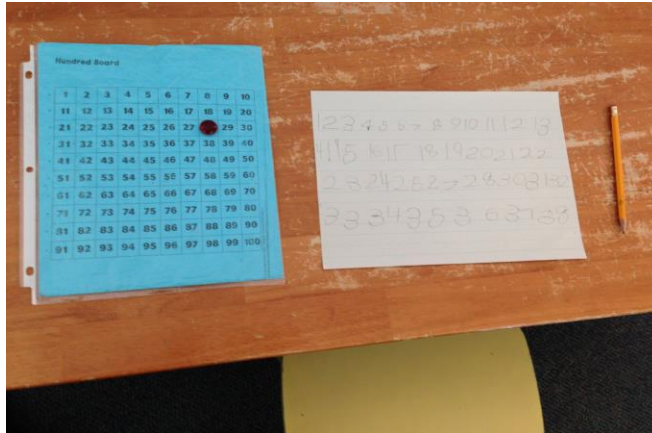


Figure 7. This student taped three pieces of handwriting paper together so that he could write all the way to 100.

Challenging children to choose Handwriting works on their own

After some observation, I discovered that there was a small group of older girls in the classroom whom almost always chose to do drawing instead of writing works. In an effort to get them to do more writing, I created a work called “silly sentences”. This work

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comprised a variety of short, readable sentences. For example: “The dog was in the fog.”

They were instructed to write the sentences and then they could illustrate them with a picture. (See Figure 8).

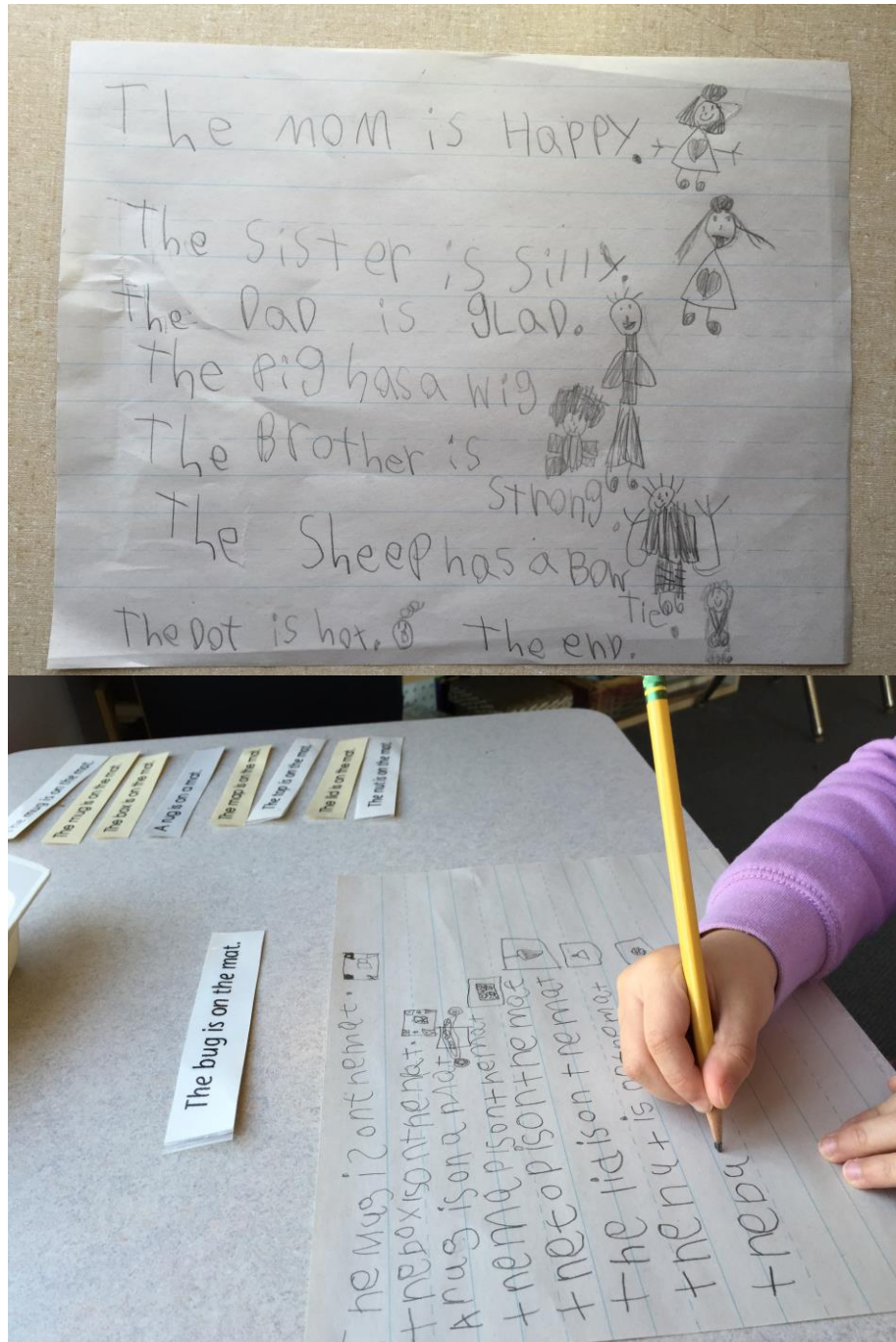


Figure 8. Choosing handwriting

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Another strategy to encourage students to take out handwriting work on their own is to provide the students with an environment that fosters their newfound joy in words and letters and handwriting. This includes providing books of interest, dictionaries, cards with facts and interesting pictures, photos cut from magazines, small objects, and any materials that may entice the child to want to write. I included these in my environment as well as finding interesting artifacts to include in the artifact boxes from all the continents of the world. (See Figures 9-10).

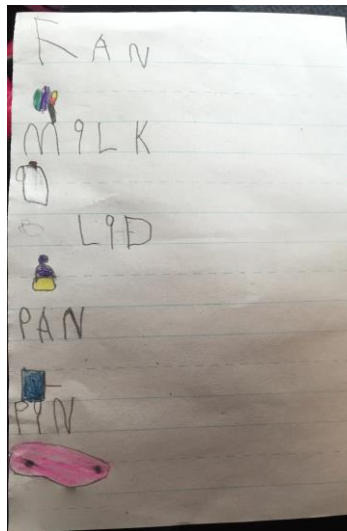


Figure 9. This student has used small objects in a box, provided in the environment, to do this work. She has written the word and then drawn a picture of the object.

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Figure 10. This student uses a dictionary. He writes the words he finds on the chalkboard

Data Analysis/Results

The overall results of this handwriting study were positive. Students generally enjoyed writing work and writing happened in the classroom consistently throughout the day in many different subject areas in many different ways. Students chose writing works on their own and this created positive peer pressure for other students to also do writing works. Children of all ages took part in the writing that was going on. Even young 2 ½ year olds enjoyed “writing” with pencils and paper like their older counterparts.

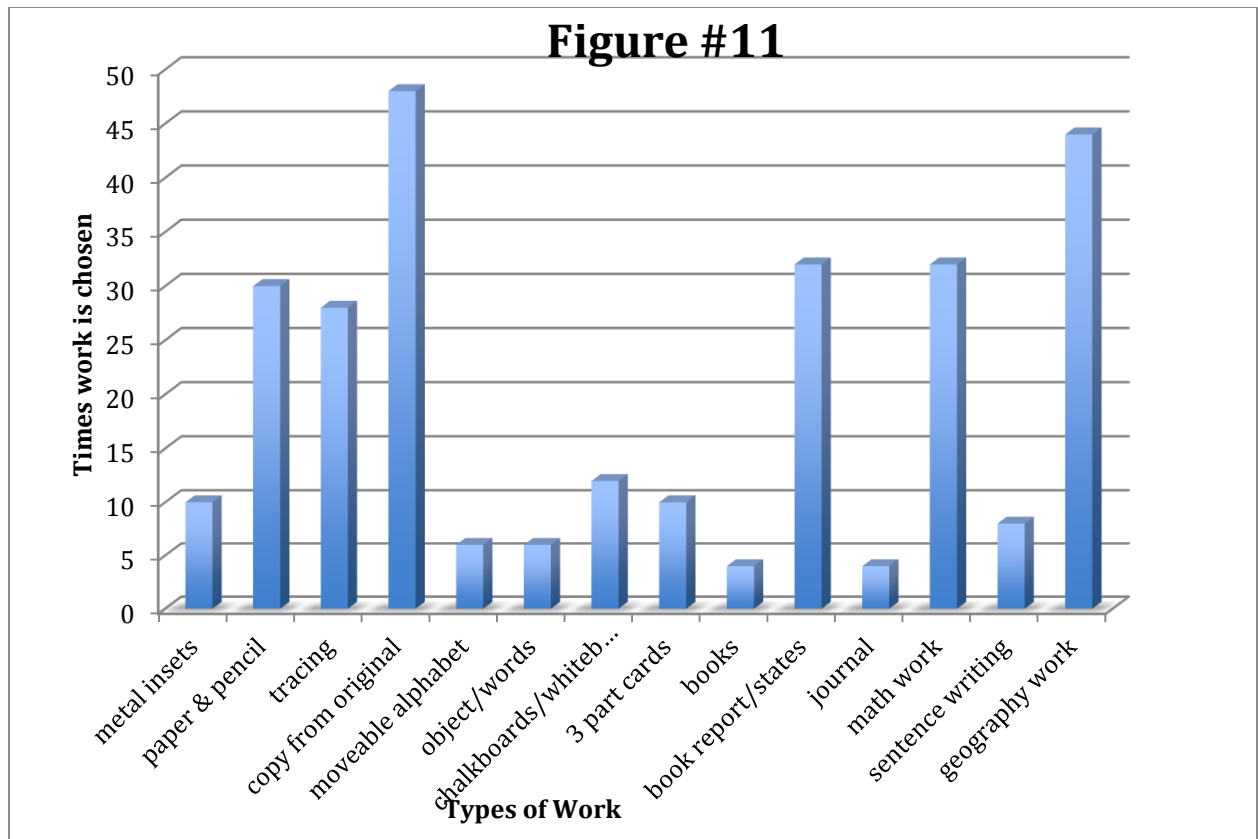


Figure 11: Most Popular works Observed

These results were expected but others were surprising. I collected this data on a daily observation sheet with the help of my assistant. We tallied the handwriting works we noticed children using daily (see Appendix B). I knew that writing with paper and pencil would be one of the most popular works. It seemed as I was collecting data that this was the work of choice for the youngest children as well as some of the older children. I suspect that it is not intimidating for a new writer to experiment with paper and pencil and to free write. I also knew that tracing and copying from an original would be very popular. There are a variety of works in the classroom that provide vocabulary for children to trace or copy. They have names, addresses, and master copies of colors, shapes, numbers and other vocabulary words to use.

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Examples of student work using paper and pencil, tracing and copying are seen in Figures 12 -15.

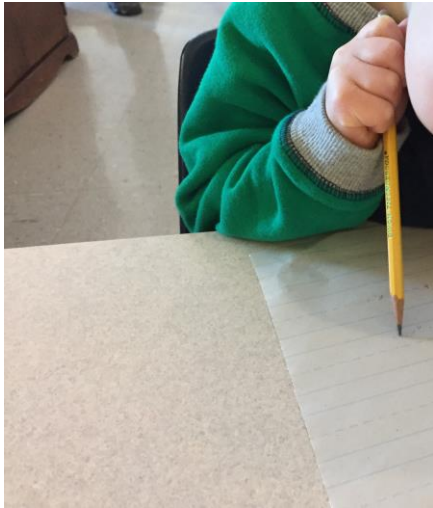


Figure 12. A two ½ year old and his first experience with writing, using paper and pencil. Young children are not discouraged to use pencil and paper in a Montessori multi-aged room, however this child could benefit from hand strengthening and pincher based works (i.e. knobbed cylinders, tweezer work etc.) as observed from the incorrect pencil grip.



Figure 13. A three year old tracing her name with a pencil; her name card has tracing paper wrapped around it, so that she can take the traced portion home and leave the card at school for everyday use.

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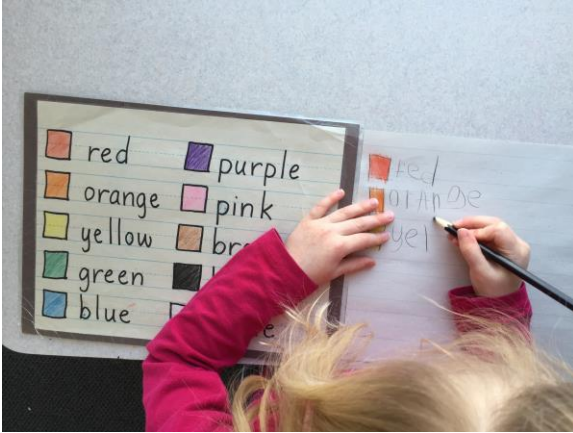


Figure 14. Student using a master of the color words with color, she is copying it onto writing paper.

Figure 15. This younger student uses the same color word master, however he has a piece of tracing paper on top, so that he can trace the color words.



What was surprising to me about the Popularity of the different handwriting works, was that the Geography works were so popular. I really made an effort to make the artifact

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boxes and the other geography works appealing to the students, however I was not aware that this would be the second most popular work done. (See Figure 16).



Figure 16.Examples of students doing Geography writing works

The students seem to do Math and Geography as much as other writing works. This shows that true integration is happening in the classroom. The students are consistently doing writing works across the different subject areas. If you notice in Figure 11, the traditional Montessori works, metal insets and moveable alphabet are not being used as much as I would have thought they would be. I did observe students using them, but their preference was more towards Math and Geography or tracing and copying from an original. The book report and state works were probably rated high in popularity because those are typical Kindergarten works. I have one Kindergartener and he is usually working on one of those works throughout the day. The content is more complex than some of the other works listed, so it probably is also more time consuming. He often gets a little distracted, so these works take him a little longer than it might for another child. Journal writing is another typically Kindergarten work, however this is our

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Kindergartener's favorite work and he usually does it the first 20 minutes of the day and then is finished. This must be why it is ranked lower in popularity.

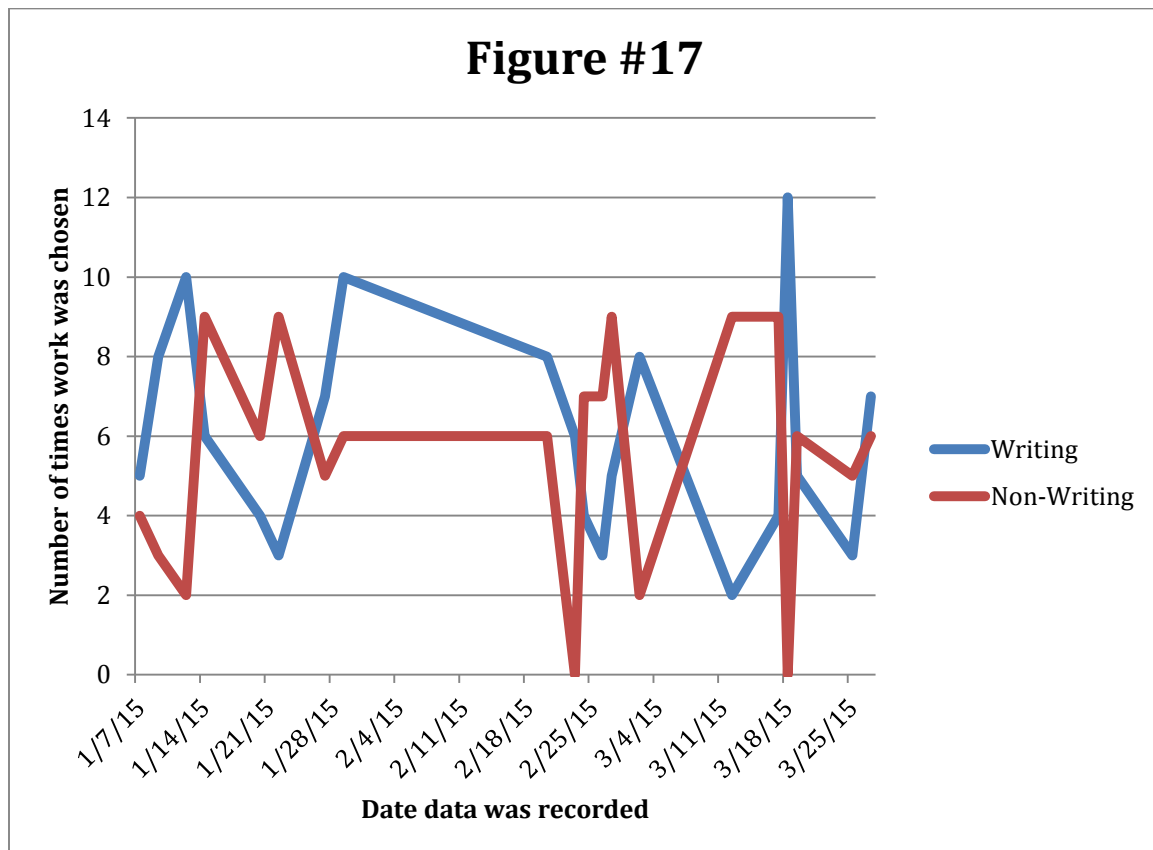


Figure 17: Writing versus Non-Writing work done

Figure 17 shows data collected twice a week comparing writing works versus non-writing works. Two times a week, I wrote down all of the works that were being done at that time, then I checked whether they were writing or non-writing works (See Appendix C). An example of a writing work would be any of the works listed in Figure 1, i.e. metal insets, copying from and original, geography work, etc. Examples of non-writing work would be: pink tower, spooning work, puzzle maps, or reading a book. In January

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students start by seeming to do both writing and non-writing works, then there is a low dip for non-writing and a high arch for writing. Writing stays consistently at approximately at 6 or above for well over a month and a half. This corresponds with the time in the classroom when there was an explosion of writing being done, which is talked about in Montessori's work as: "It often happens that the outward evidence of this inward mental growth reveals itself with an almost explosive violence" (Standing, 1957, p. 247). This was evidenced in our classroom by young 3 and 4-year-olds writing pages and pages of the letter M. After this they wrote on anything they could, small pieces of cutting paper, writing paper, on the backs of their paintings. This progressed to more letters than just "m". Then soon they were writing words from signs in the room, from the front covers of books, and then each other's names.

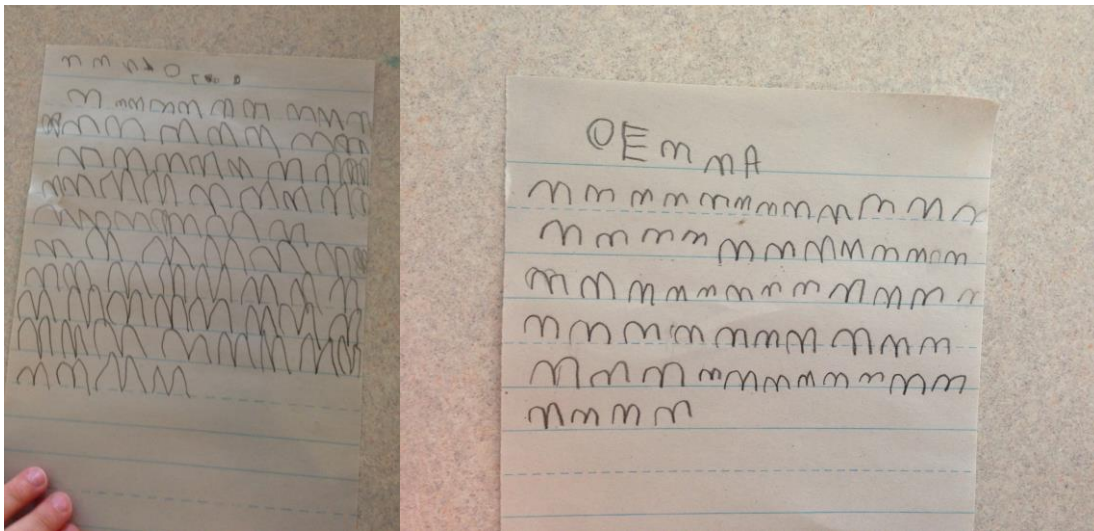


Figure 18. Explosion of Writing: Here are two samples of student work samples showing the writing of M's.

Benefits of Handwriting

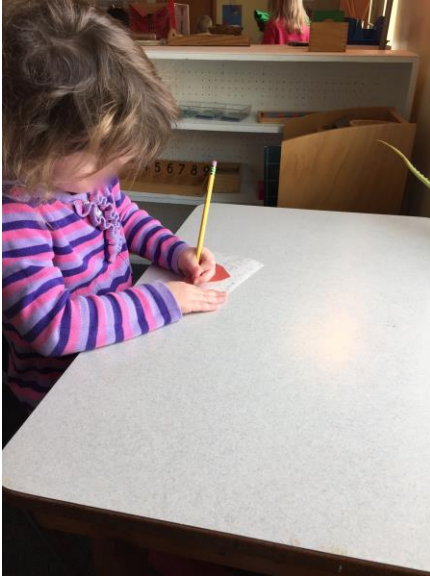


Figure 19. Explosion of Writing: The students in these pictures above are writing letters or words on scraps of paper; artwork (first photo) and cutting paper (second

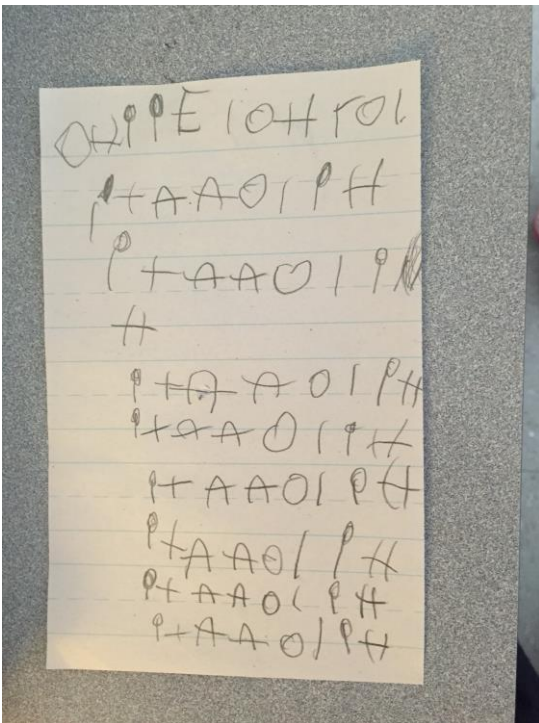


Figure 20. Explosion of Writing: The student work in these two pictures shows the progression from when they wrote one letter to now many letters and then words.

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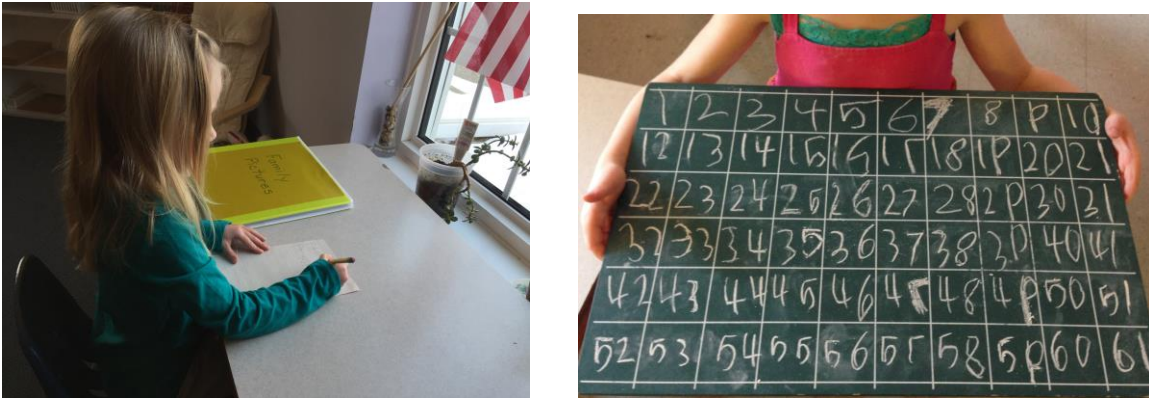


Figure 21: Explosion of Writing: In the first picture this child has the class family album with photos of the students in the class with their families. She is writing the title down on her paper, “Family Album”. In the second picture, this student decided to write numbers as far as she could go to fill up all the squares on the chalkboard.

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The data in Figure 17 also shows that there were two very low dips in the non-writing work. There were two times when non-writing work was not done at all. The writing work was consistently in the middle or above, it never dipped to zero. In fact, writing was the only kind of work to go above 9. It would be interesting to see if this data continued to develop in this way, with writing as the consistent factor and the non-writing works fluctuating.

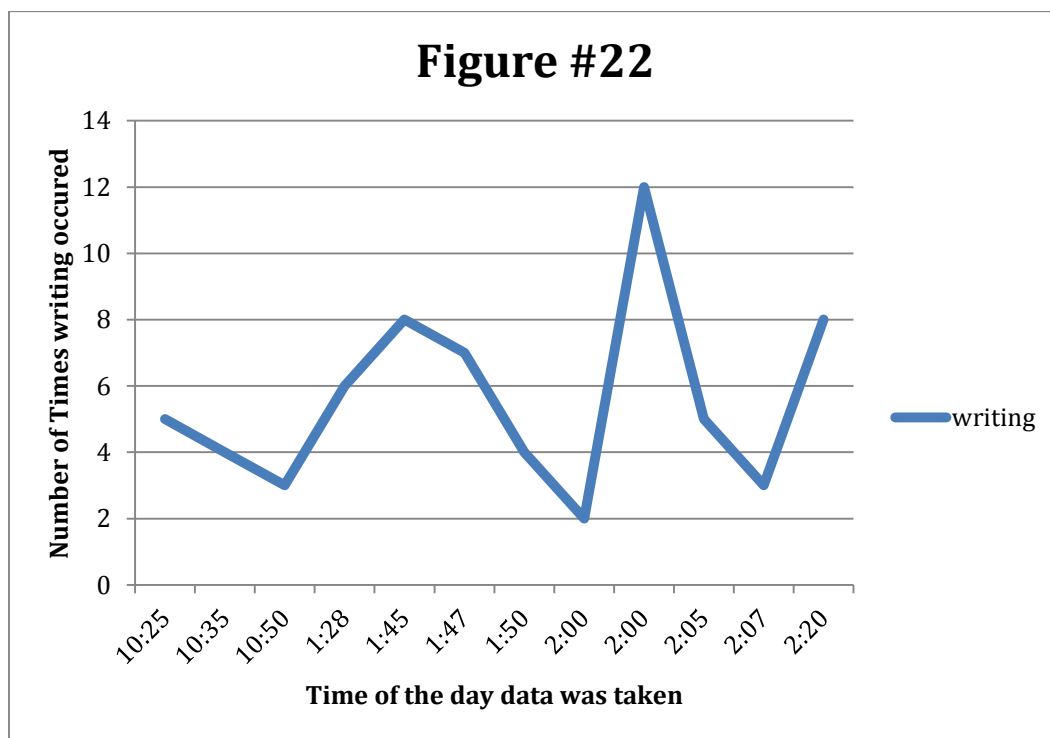


Figure 22: Times when the most writing is done

In February and March the times that data was collected were also noted. Figure 22 shows the times that data was collected that corresponded to the most writing done. As shown, in the early morning, the numbers for writing are a little sluggish. This is standard in our classroom, because this is when all the youngest children are awake and working.

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Most of the younger children do Practical Life and Sensorial works. Only a few of them attempt writing. In the afternoon, after lunch ends at 12:30 there is a jump in numbers. This is when the younger children go to nap and the older children are awake and doing more academic work. The numbers for writing dip again at 2:00pm. This is not surprising, because this is the time that we usually have snack out and available in the classroom. Children can get snack as they choose throughout the work time, however it is probably most popular at this time of the afternoon, after they have completed their first works. Writing again spikes in the late afternoon, after everyone has had snack and returned to their work. This data presumes to show that children choose handwriting on their own, following their own schedule. When it is available to them to do, they usually do it. Snack time and naptime seem to be the only deterrents.

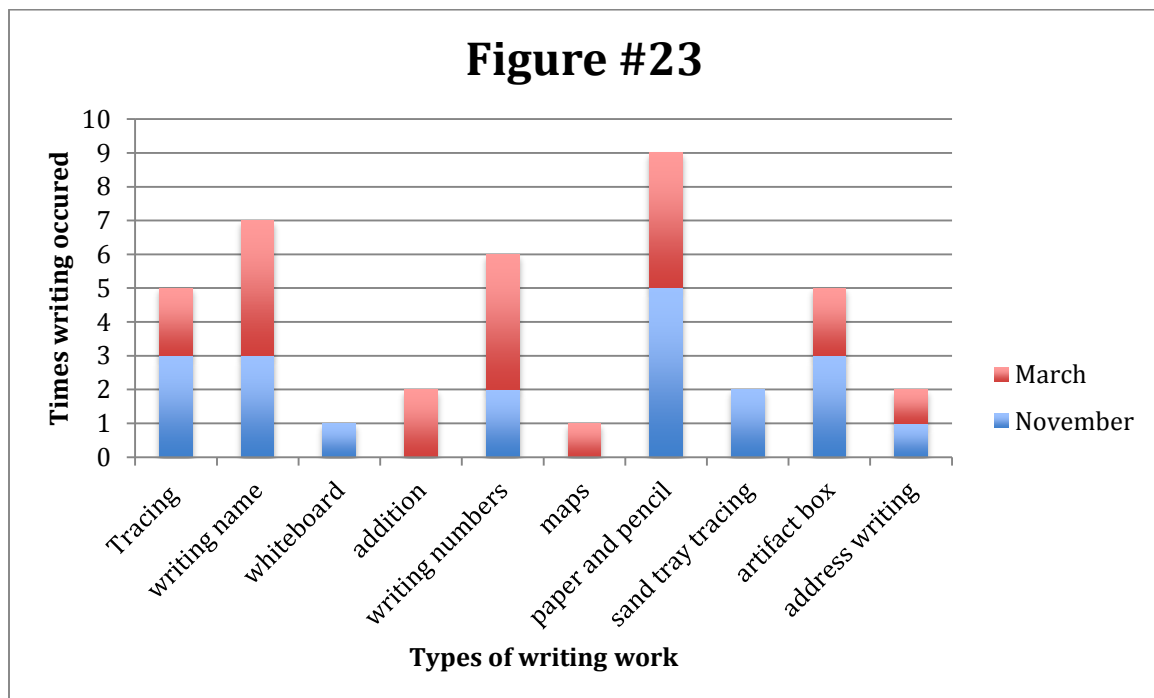


Figure 23: Favorite works according to students, in November then March

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As Figure 23 shows, the students were interviewed in November and then again in March. This bar graph shows their changing views on what works are their favorites. In November, many of the students chose tracing, writing names, writing numbers, paper and pencil, the artifact box and sand tray tracing. Beginning skills like tracing and sand tray tracing are generally popular in the beginning of the school year because for many, this is their first exposure to writing. In March, the students have said that their favorites are writing names & numbers, and using pencil and paper. They have also added addition work and maps. The data shows the move from simple to complex. The students are still doing tracing, but they have moved on to other more complex writing skills.

November	March
"I like to do it with my mom."	"Doing my name."
"It's fun to write."	"Map work and state and addition work"
"Because I wanna do it."	"Motorcycles"
"I want to make something for my mom."	"Writing"
"Because I want to."	"The artifact boxes"
"Because I like it."	"Writing someone's name"

Figure 24: What do you like about writing work?

As Figure 24 shows, the question was asked of students in November and March, "What do you like about writing work?" The answers from six students are shown above. The wording in November, is mostly vague indicating the students just enjoy writing and doing it for someone else. In March, the students share specific examples of writing work that they like to do. This shows progress over time; the students are better able to articulate which works they enjoy. It also shows growth, beyond doing writing for someone else; the student does it in March because he/she enjoys it.

November	March
"Copying the book about lizards"	"numbers"
"my daddy"	"my daddy"
"coloring"	"P, M, G"
"pirates"	"maps"
"10 hot dogs book. She is so funny!"	"Journal, maps, books, or making a book"
"nothing"	"numbers"

Figure 25: What do you like to write about?

As portrayed in Figure 25, the students are asked again in November and then in March, “What do you like to write about?” Some answers change from easier work to a more difficult writing work. The child that likes to write about his “daddy” still likes too in March as well. The last child changed his answer from “nothing” to “numbers”, showing that he now knows what he likes. Overall, it seems that the students are progressing in their interests and saying specifically what things that they like to write about.

Case Studies

I selected four students to observe from August to March. I took work samples over time and also noted which writing works they chose (see Appendix D). I chose a student from each age group, one 2 ½ year old, one 3-year-old, one 4-year-old and a 5 year-old.

Benefits of Handwriting

Case Study Child #1 (2 ½ year old)

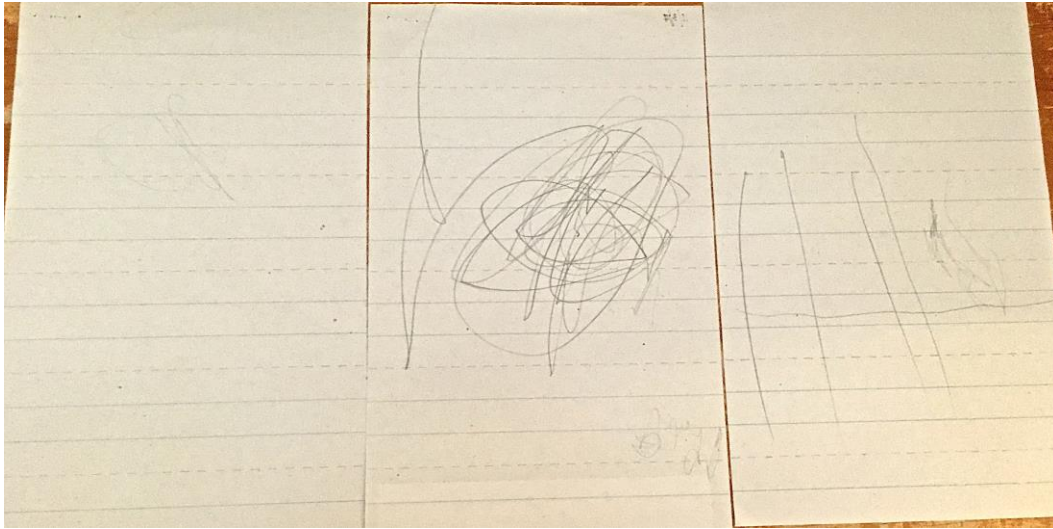


Figure 26. Work sample over time for Case Study #1

As portrayed in Figure 26, this child has shown progress over time; the first work sample was taken in August, the second sample was taken in November and the third sample was taken in March. In August the child did not yet have very much hand strength. He got better over time, as shown by the second picture. Here he is making circular marks. Finally in March, his markings resemble letter H's.

The works that this child chose most often were: spooning, scooping, tweezer work, pencil and paper and name tracing. The child's hand strength developed over the months. It is evident that the Practical Life works that he chose to do most often were crucial in strengthening his hands. He was probably motivated by the other older writers in the class to choose other writing works, like writing on writing paper and tracing his name. Positive peer pressure works in a multi-aged grouping like Montessori classrooms to help children choose works they wouldn't normally chose. They see the older children doing these works and know that they are capable too.

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Case Study Child #2 (3 year old)

Work sample over time

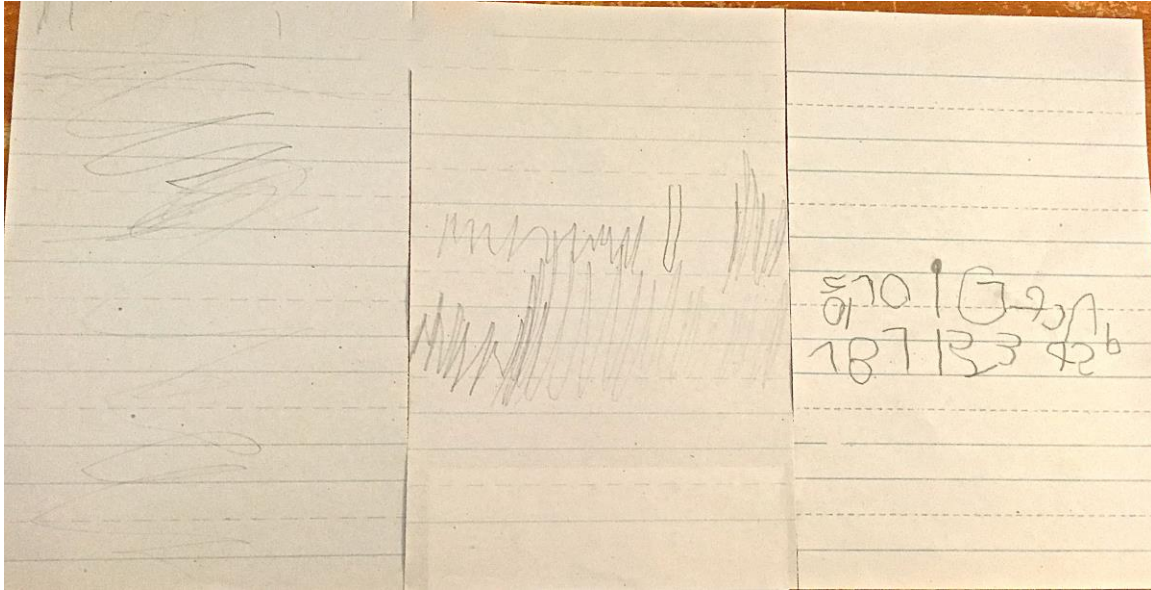


Figure 27. Work sample over time for Case Study #2

These samples were also taken in August, November and March. This student has shown remarkable and amazing growth in 7 months time. He began in the summer writing with light horizontal marks, in November he was writing horizontally, with more pressure. By March this student was writing letters. He now writes his whole first and last name on all the work he does.

The works that this child chose most often were: name tracing, chalkboard, whiteboard and pencil and paper.

It was evident that this child wanted to know how to write. He did not chose typical Practical Life works. He did do the Pink Tower occasionally, but he most often chose any kind of writing work that he could. He traced letters, modeled them on paper and was

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finally writing his own. His parents were completely amazed, because one day, he just wrote his whole name, as if he had been writing all along.

Case Study Child #3 (4 year old)

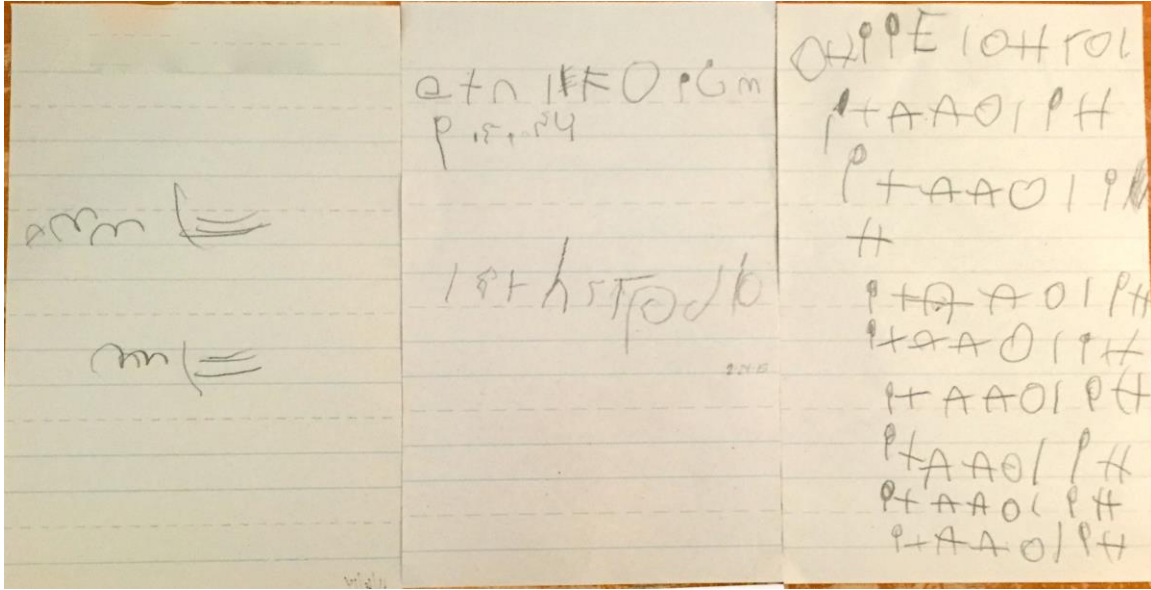


Figure 28. Work sample over time for Case Study #3

Figure 28 portrays samples taken in August, November and March. This student has shown growth as well. She started with e's and m's then moved on to trying other letters. In March she was writing many different letters. She likes to fill pages with these letters. This 4-year-old still fists her pencil. She has access to a finger grip and she usually uses this on her pencil when she writes. However she writes with more control and firmness when she is not using the pencil grip.

The works that this child chose most often were: 3 part card works, artifact boxes, moveable alphabet, cards and counters and pencil and paper. This child did not appear to enjoy writing right away. She seemed to practice it because it was part of other works

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that she wanted to do. It seemed that she also was influenced by the “writing explosion” that happened in the classroom. Her peers motivated her. However, it is remarkable how much she has progressed, and now she free writes on her own without outside motivation.

Case Study Child #4 (5 year old)

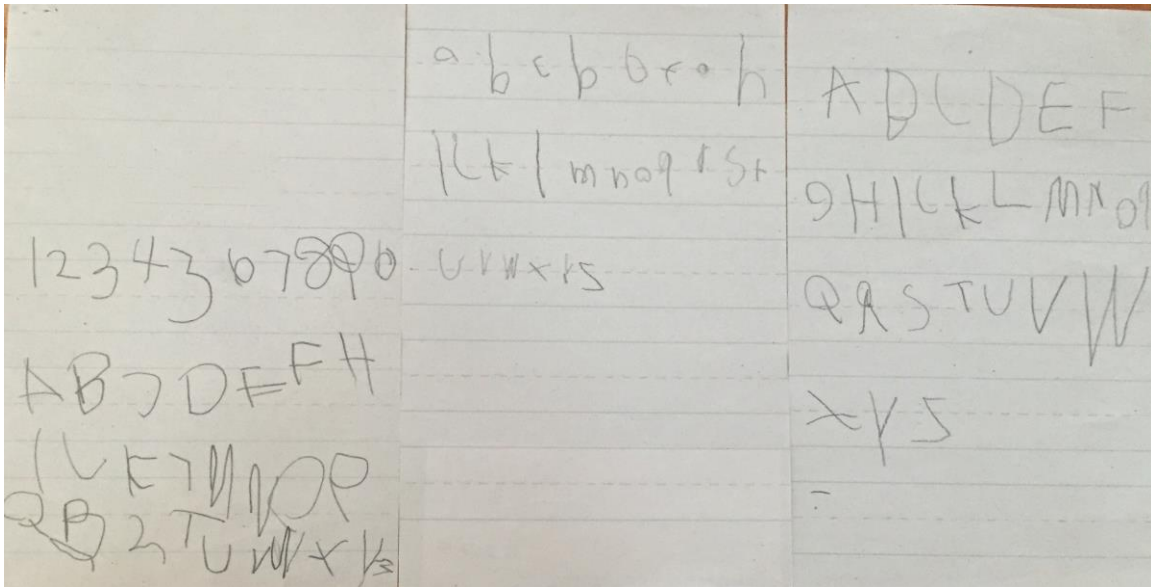


Figure 29. Work Sample over time for Case Study #4

This student was not at our school in August, so these work samples are from November and the two on the right are from March. As you can see, this student has also improved in his handwriting ability. The work sample on the left with numbers 1-10 and the alphabet is a little sloppy and not on the lines. In March he can write on the lines and he writes the alphabet in lower case letters as well as in capital letters.

The works that this child chose most often were: map work, state studies, addition strip board, and multiplication with bead bars. This child is incredibly intrinsically motivated. He pushes himself. On his own he decided to make a book with reports for

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each state. He is motivated by a project and by a list. He likes to check off items and complete them. He did not seem to be motivated by other students, he seemed to be motivated by his own eagerness to learn new things. His writing improvement was a byproduct of his academic endeavors.

Parent Surveys

In March, at the end of the study the parents were given an anonymous survey to fill out. Of the 20 families that participated, I received 8 surveys back. The questions were all to be rated from 1 to 5. 1 means no and 5 means yes. They were first asked to rate the following statement: My child's handwriting has shown improvement since October. (See Figure 30).

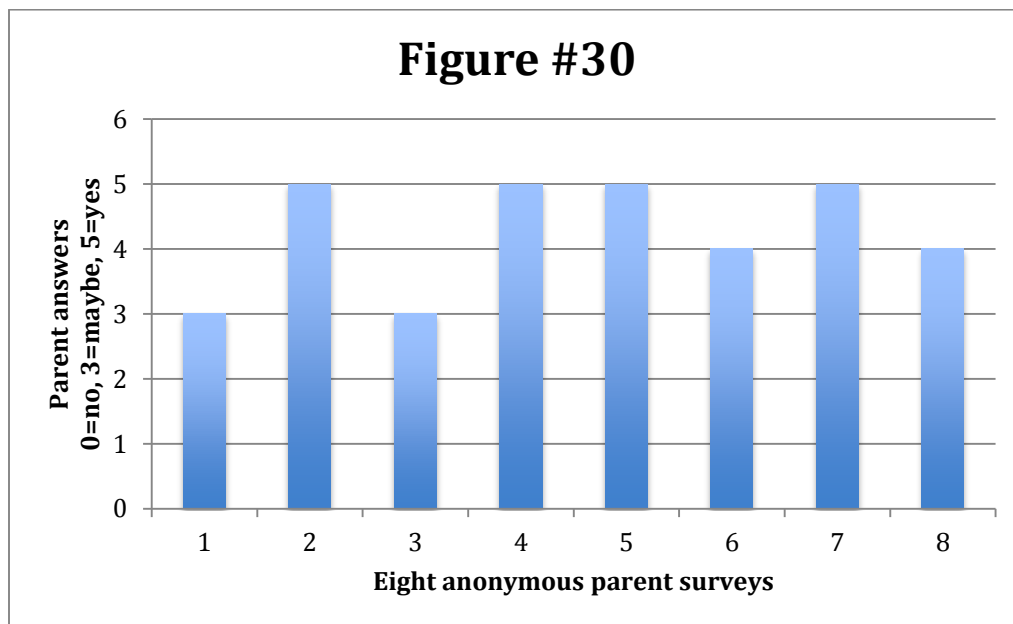


Figure 30: Has child shown handwriting improvement?

The average total score for this question is: 4.25 out of 5. This shows that the parents that participated in this project do overall believe that their child's handwriting has improved

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over the past 6 months. One of the parents that gave a score of 3, said she did so because she was concerned about her son's letter reversals. She said that he very thoroughly enjoyed writing, but that she was still concerned that he writes some letters backwards. The other parent that scored this question a 3 said, "Content has increased. Neatness is a work in progress."

The second statement to be rated was: My child writes on their own at home, without encouragement. (See Figure 31).

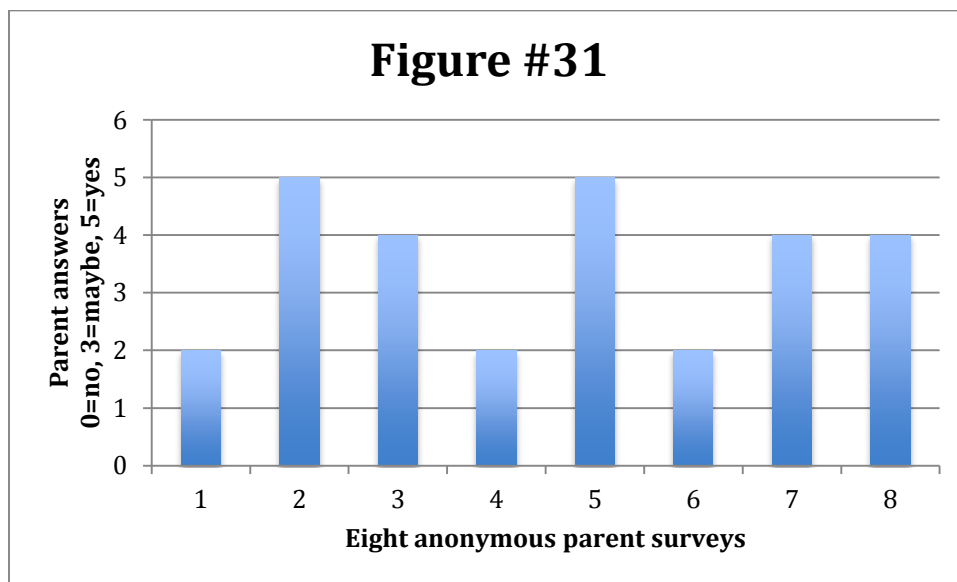


Figure 31: Child writes at home without encouragement

This question rated an average score: 3.5 out of 5. The parents were provided with a space to leave examples for this question. They gave many examples of things their child writes at home: one child uses post-it notes and writes his name on them, then hands them out to his family, like presents. Another child writes down all the words he sees

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around the house and on t-shirts. Thank you notes are another example of writing a child does at home. Based on all the examples, it seems like the students are writing at home, however they could probably be writing more.

The third statement to be rated by the parents was: My child talks about writing work that they do at school. (See Figure 32).

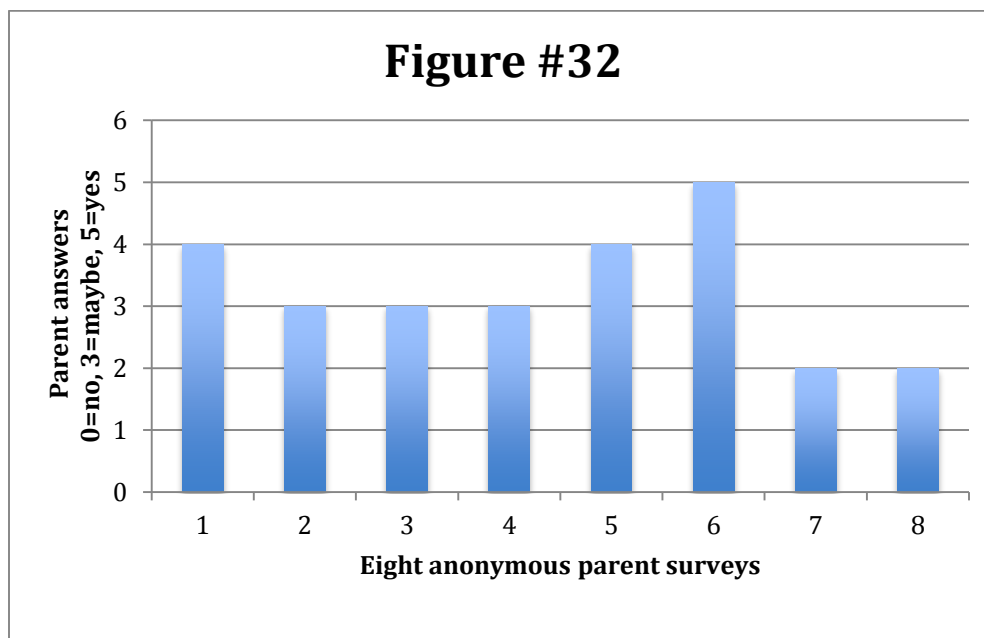


Figure 32: Child talks about writing work done at school

This question also averaged a score of 3.25 out of 5. This question has an average rating. The examples given by the parents were that child mentioned doing “pencil-ing” work and another child loved sharing random words written down on paper. This is a skill that can be developed. However, at school we want children to be intrinsically motivated, so

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we don't make a huge deal over the work done. We use specific words when we praise work done, instead of saying "good work" or "good job", we say the literal "You wrote the numbers 1 through 20!", "You wrote 10 sentences!". It is our hope that this will help the child feel good about their accomplishment and not that the quality of their work defines them.

The final question for the parents to rate was: Is it your assumption that Montessori materials benefit your child's Handwriting progress? (See Figure 33).

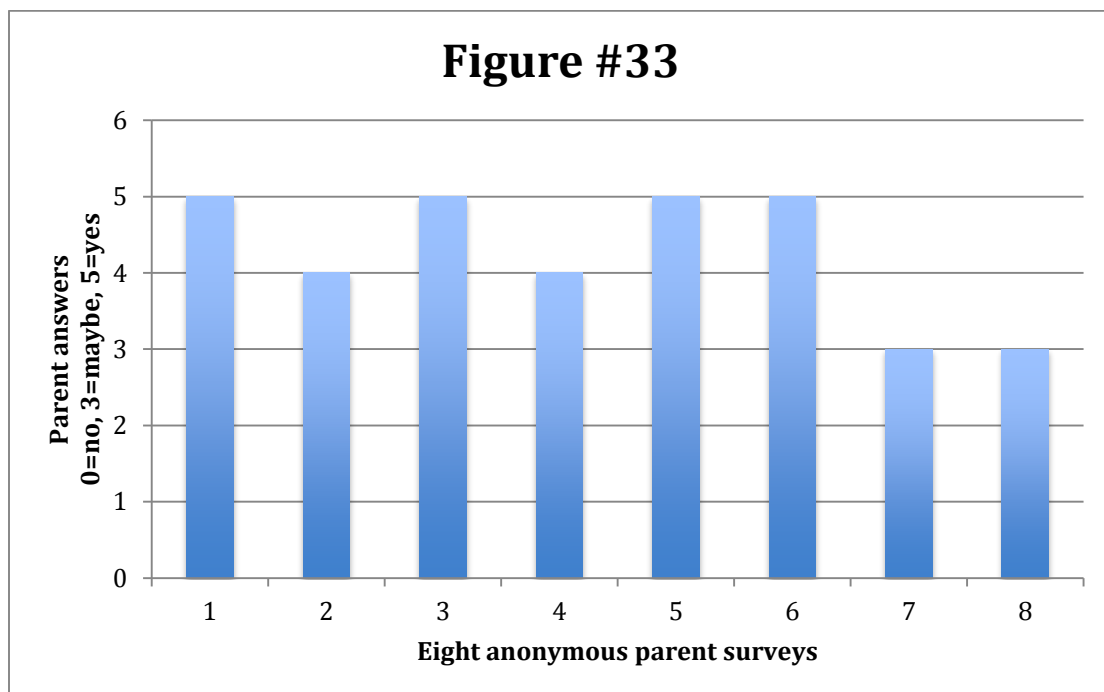


Figure 33: Are Montessori materials beneficial?

This question scored an average 4.25 out of 5. The parents in our classroom generally believe in the Montessori method and its influence on their child's writing.

Future Action Plan

During the eight months that this study took place, I watched the students in my classroom go from pre-writing to writing. I witnessed an amazing explosion of writing when students were writing down every word they could find. It was an exciting project and I would like to continue the excitement for writing in my classroom. I would like to spend more time exploring the use of specific Montessori materials, like the metal insets. I would also like to give more varied presentations and see if that has any influence on the use of specifically Montessori works. I will continue to integrate writing with different subject areas in the classroom. I believe that this integration is true to the Montessori method. As the 3 and 4 year-olds in my classroom continue to grow, they will carry this time of handwriting refinement with them. It is my hope that this excitement will be passed on to the new 2 ½ year olds in my classroom and that the cycle of excitement for writing will continue. I would like to encourage writing beyond the “silly sentences” work and have students seek to write creatively, perhaps with the moveable alphabet. I will seek to find materials that inspire writing and encourage experiment through handwriting works. I endeavor to include jobs in the classroom that incorporate writing, such as having the students interview each other and compile results or having students label materials in the classroom and then writing those object down. I also will create more works in the classroom that incorporate writing and drawing, so that those students that are artistically-minded will be drawn to writing works as well.

Analysis and Conclusion

This study was successful in meeting my goals for my classroom. Montessori materials did benefit handwriting in my classroom. The growth of the students, through interviews and work samples is undeniable. The students in this classroom have worked hard and gained results. Their parents have also noticed and believe that Montessori materials benefit writing. To improve, we should be able to get students excited about their work and willing to share it with their families. We could support this by helping the children with writing projects to share with their families.

Can handwriting be incorporated in other subject areas of the classroom? Yes! Integration of writing with other subject areas is a natural process. Children enjoyed when works included writing and they learned new vocabulary this way. When children are naturally drawn to art or geography or math and this work incorporates writing, they are learning twice as much when they practice it. Writing is easily added to works in other subject areas and should continue to be. In fact, these integrated works were some of the most popular works chosen by children in this study.

Can children be encouraged to take out handwriting works on their own? Yes, the children in this study did choose handwriting works independently. With an environment prepared to intrigue them and encourage them to write, they did. Modifications made to lessons to include children that would rather draw than write were also successful. Children chose to write and were consumed by this writing work for many months. They delighted to write everything that they could.

Students in the case studies succeeded as well. Four different children of different ages and abilities were all able to grow and develop better handwriting skills. Even the

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youngest, at 2 ½, now 3-years-old showed significant progress and desire to write. The Montessori materials as well as those typically used in writing helped the students achieve these goals. Parent interviews proved that they also believed this was true.

Which handwriting works were the most popular and seemingly most effective? The materials in the classroom that proved most popular and effective were not conclusive. It seems as if an integrated approach to handwriting materials was needed as well. Practical Life and Sensorial materials, as well as typical writing materials (paper, pencil and chalkboards) were both effective, but mostly in use with each other. Geography work was also popular with the use of maps and artifact boxes. This integrates again, the Montessori materials with writing materials. Although the students did use typical Montessori writing materials like metal insets and the moveable alphabet, these were not the most popular. Traditional tracing, copying from original and pencil and paper still are the most popular and children still love to write their own names. The Montessori classroom has always been designed to work together cohesively between the subject areas, this study also shows that this is indeed the best approach.

Do the materials that promote handwriting in the Montessori classroom challenge students of varying ages and ability levels? Yes, I believed they do. Children of all ages chose a variety of materials to work with, including the Montessori writing materials. However, as Montessori has suggested, time in Practical Life and Sensorial is most definitely needed to strengthen the hands before writing begins. After students have had time to develop concentration and hand strength they sometimes just jump immediately into writing with paper and a pencil. This surprised me, that there was often no middle ground, but immediate writing. I believe the Montessori classroom prepares a child to

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dive in right away if they are so inclined. Therefore, the isolation of only the Montessori writing materials is not beneficial to the child, the whole method, including preparation in the basics (Practical Life and Sensorial) is needed.

I learned so much through this project. I discovered that children could definitely be motivated to choose writing works. They liked when combining writing with geography, art, science, etc. They learned to love writing so much that they sought more difficult versions of the work they were doing. In eight months time, non-writers became writers and those that were already writing, refined their skills, so that the work they did was neater and more legible. It was so much fun to see students become excited about the writing process and to share that excitement with each other.

Handwriting is still relevant. Children love to learn how to write. This classic form of communication is not useless in this technological age. The need for handwriting skills to be taught is still present, perhaps now even more crucial. The brilliant 15th century mathematician John Napier realized the importance of handwriting and even more elemental, the use of the hand. He said, “When the hand is at rest, the face is at rest; but a lively hand is the product of a lively mind” (Napier, 1993, p. 4). This is what we want to teach and show the learners in our classrooms, we want to demonstrate how they can enliven their minds through the process of handwriting.

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Appendix A: Parent Permission Letter

Dear Children's House Families,

As part of my work on my Graduate degree at the University of Wisconsin River Falls, I will be doing an action research project in the classroom. This project will focus on the growth and progression of Handwriting in the Montessori environment. Your child will be involved as I observe and assess the way their handwriting improves and determine how they perfect their handwriting skills. My goal is to demonstrate that the Montessori plan for Handwriting is relevant and successful in the Children's House environment and discover ways to improve instruction in this area.

I would appreciate your consent to have your child's Handwriting and photos of their hands as they write reproduced and used as research for my project. I will use a pseudonym to protect your child's privacy. Please be aware that this research may be shared with other educational communities. If you agree, please sign this consent form and return to me. Also, if any of my findings are interesting to you please know that you may have access to them at any time during this process, if you chose to.

Participation in this research is completely voluntary and at any time you may have your child withdraw from the study if you decide to.

Thank you for your assistance. If you have any questions or concerns please feel free to call me at school or email me. (Phone: 222-222-2222 or email: yourname@this.com)

Sincerely,

Erin McFarland
Pre-K Teacher

I agree to participate by giving permission for the use of my child's handwriting and possible photos of their hand as they write as described above.

Parent name (print) _____

Parent name (sign) _____

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Appendix B: Types of writing chart for tallying writing works done

TYPES OF WRITING	Monday	Tuesday	Wednesday	Thursday	Friday
metal insets					
paper and pencil					
tracing					
copy from original					
moveable alphabet					
object/words					
chalkboards					
whiteboards					
3 part cards					
books					
book report/states					
journal					
math works					
sentence writing					
geography work					

TYPES OF WRITING	Monday	Tuesday	Wednesday	Thursday	Friday
metal insets					
paper and pencil					
tracing					
copy from original					
moveable alphabet					
object/words					
chalkboards					
whiteboards					
3 part cards					
books					
book report/states					
journal					
math works					
sentence writing					
geography work					

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Appendix C: Chart to tally writing vs. non-writing works

[illegible]

Appendix D: Case Study Students' work choices

[illegible]

Parent Survey

If you have a chance, please take the time to fill out this brief survey to help me in my research in the classroom. Please return to the mailbox outside the door of Children's House 1. Thank you for your time!
Ms. Erin

Please circle the number that corresponds with your answer. Include any additional comments on the lines provided.

	1 No	2	3 Mostly	4	5 Yes
My child's handwriting has shown improvement since October.	1	2	3	4	5

My child writes on their own at home, without encouragement.	1	2	3	4	5
--	---	---	---	---	---

Examples: _____

My child talks about writing work that they do at school.	1	2	3	4	5
---	---	---	---	---	---

Examples: _____

My child is excited to show me their writing work.	1	2	3	4	5
--	---	---	---	---	---

What kind of writing work does your child bring home?

Is it your assumption that Montessori materials benefit your child's Handwriting progress?	1	2	3	4	5
--	---	---	---	---	---

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