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The Effects of Implementing Montessori at Home on Children's Independence and Self-Regulation in a Montessori Classroom

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Abstract

The ultimate goal of Montessori educators is to prepare the child, the whole child. One who is not only excelling academically, but also is independent, a critical thinker, and can collaborate with people from all different walks of life. The role of the Montessori educators is to prepare and guide children to independence, this is an increasingly difficult goal to achieve independence and self-regulation especially in the three to six, and six to nine age group. The Montessori guides have grappled with the disconnect between the home environment and school environment, citing it as the major obstacle to children's independence. In this paper, the literature about parent involvement and its impact on children independence and self-regulation in a Montessori classroom are reviewed. This paper explains the research tools that were employed throughout the research period as well as the methodology, and findings and conclusions.

Key words: Montessori, self-regulation, independence, Montessori guide

The world is changing and at a rapid pace. No longer are we a society built solely on factory jobs. Employers are now looking for their employees to be able to solve problems independently and to be able to think of innovative ways to complete tasks. Being able to work independently is an essential element required of the twenty-first-century worker, each workday new problems arise, and it is necessary for employees to solve these problems without seeking the help of their employer at each step. To prepare future generations for their next environment, the workforce, children need to be allowed to independently solve their problems and find creative solutions to challenges that they encounter. When given the latitude necessary to solve their own problems, children can develop their higher-level thinking, and their executive functioning skills grow stronger.

Maria Montessori was an innovator for her times, becoming one of Italy's first female physicians. She went on to use the scientific method to study children and how they learned best. Following her research, she introduced the Montessori philosophy of education. The Montessori philosophy of education is widely used today in both private and public schools throughout the world. Montessori realized that children craved independence, they wanted to solve their problems without the aid of an adult. When given the time and space to be independent, she realized that the children were not only happier, but were able to solve complex problems. Perhaps one of the most significant challenges a Montessori guide faces is the inconsistency between the home and the school environments. While most of the Montessori parents are willing to help, to reinforce Montessori skills at home, they don't know how. If the skills acquired at school are reinforced at home, children are likely to make more progress. If

independence is to be achieved, teachers and parents must work together and support each other so skills acquired in the classroom can be reinforced at home.

Our society has come to view children as overly dependent and incapable of problem-solving on their own despite the research conducted by Maria Montessori. Montessori's educational philosophy suggests a child needs to be independent and to develop executive functioning skills both at home and in the classroom (Montessori, 1995). The ultimate goal of every Montessori guide is to help children become independent. However, one of the biggest challenges is that the skills acquired in the Montessori classrooms are not reinforced at home. Classroom teachers can only enhance what the parent has nurtured at home. The purpose of this action research study is to determine if increased independence in the home will increase the level of independence in a Montessori classroom.

Research questions

- 1) Does parent education by Montessori educators in fostering *independence and self-regulation* at home translate into *students' independence and self-regulation* in a Montessori Classroom?
- 2) If yes in 1), in which areas do student show progress towards *independence and self-regulation* after parental involvement in fostering independence and self-regulation at home?
- 3) How can teachers support parents' involvement in fostering independence at home?
- 4) What role does the prepared environment (e.g. child-size tools, few choices, accessibility, etc) at home and in the classroom play in fostering a child's independence?
- 5) Are children more independent at school more than at home?

- 6) What is the role of Montessori guides' involvement in the attainment of *students' independence and self-regulation*?

Literature Review

Within the Montessori philosophy, there is an underlying principle that all children are working towards becoming independent citizens that grow to become self-confident adults (Montessori, 1995). It is up to the adults around the child to guide them so that they can help themselves to become creative problem solvers needed in the 21st century (Dorer, 2018; Ervin, Wash, & Mecca, 2010; Lillard, 2007; Haakmat, 2015; Henson, 2014). When a child is independent, they are free from relying on others and can make decisions without depending on another to aid them through their decision-making process (Dorer, 2018; Ervin et al., 2010; McFarland & McFarland, 2013; Lillard, 2007; Montessori, 1995). The purpose of this action research is to examine the effects parent education and involvement has on children's independence and self-regulation in primary and lower elementary Montessori classrooms. In this literature review, we review the scholarly work that has been done on self-regulation, causes of dependence, the parental effect on children's independence, benefits of independence, and how to create independence. Before discussing the literature, we briefly discuss Vygotsky's theory of proximal development and its application to our research.

Theoretical Framework - Vygotsky's Zone of Proximal Development

The role of the Montessori guide is to help the child attain independence. Montessori guides give the initial lesson and let the child practice independently until they master the lesson. Because of the nature of the Montessori classroom materials, the children can self-correct, making it possible for the guides to stand back and watch children work independently. The

guide does not interfere even when the child makes a mistake. Mistakes are viewed as a part of learning in the Montessori classroom. Also, there are a lot of peer learning opportunities going on in the Montessori classroom. When a child gets stuck on a lesson, they usually go to their peers before going to the guide. Our research is based on the same premise that independence at school or home is best attained by giving children the space to practice everyday chores, with the adult intervening with instruction only when needed.

Vygotsky's theory, Zone of Proximal Development, provides a theoretical framework to our research on the impact Montessori at home has on children's independence and self-regulation in Montessori Classrooms. According to Vygotsky's theory of Zone of Proximal Development (ZPD)...

“The main goal of education from Vygotskian perspective is to keep learners in their own ZPDs as often as possible by giving them interesting and culturally meaningful learning and problem-solving tasks that are slightly more difficult than what they do alone, such that they will need to work together either with another, more competent peer or with a teacher or adult to finish the task. The idea is that after completing the task jointly, the learner will likely be able to complete the same task individually next time, and through that process, the learner's ZPD for that particular task will have been raised. This process is then repeated at the higher level of task difficulty that the learner's new ZPD requires.” (Shabani, Khatib, & Ebadi 2010, p. 238).

This guides our research as what the Montessori guides do in the classroom involves introducing a lesson then letting the children practice and master on their own. Likewise, parental reinforcement of what is done in class helps enhance independence and self-regulation.

Vygotsky's theory of Zone of Proximal Development addresses the role of adults and peers on a child's independence. Adults and peers play the role of initiators of learning or mastering a skill. They help the child attain a certain level of ZPD. To move to the next level of ZPD, adults and peers will once again help the child attain the new skill or knowledge in order to get into that ZPD. Once attained, the child can function or operate on their own without the intervention of the adults or peers. Therefore, according to Vygotsky, adults and peers help with initial learning of a skill or new knowledge. According to his theory, however, no need for repeated intervention is needed in the use of learned knowledge or skill. Adult and peers need to create space for the child to try out things on their own, only intervening when it is absolutely necessary like relearning a skill previously introduced by the adult. Our review of research has shown that a child's independence can fluctuate depending on the adults in their presence and how the adults intervene in everyday tasks. Adults that intervene only at the beginning of a task and give the child space will likely foster the independence more than those who hover over a child every step of the way. We have also witnessed children motivated to do things for themselves when they see their peers acting independently on the same tasks. Lillard (2007) argued that, "Children with insecure attachments have parents who behave in two opposing ways. Parents of insecure-resistantly attached children seem to frequently interfere with the child and fail to give the child independence when the child needs it." (p. 266). However, children are motivated to accomplish tasks for themselves when they see their peers doing the same.

Self-regulation

Self-regulation is the ability to do something that is necessary and having the ability to control an impulse (Aras, 2015). Studies indicate that there is a link between the ability to

self-regulate and academic success (Aras, 2015; Blair, 2003; Cadima, Verschueren, Leal, & Guedes, 2016; Ervin et al., 2010, Lillard, 2007). A Montessori guide would define self-regulation as the child's ability to control themselves by working without bothering others, respecting other people's spaces and boundaries, and respecting the materials in the classroom. According to a study conducted by Ervin et al. (2010), children that are in a Montessori environment have higher levels of self-regulation, and these skills increased with more consistency over the 3-year period that the study was conducted compared to non-Montessori children. Based on the above definition, self-regulation is a result of independence.

Causes of Dependence

Independence in a classroom has different definitions for different people. Independence has been studied due to its relevance to learning (Cameron, 2007; Farlow, 2000; Hargreaves, 2014; Kelley, 2018; Radford., Bosanquet, Webster & Blatchford, 2015). Research suggests that independence is the ability for one to accomplish something without burdening others (Woo, 2014). Others suggest that independence is an individual's degree of dependence on others in terms of behaviors and feelings (Lizhu & Xiaoyan, 2005). Put differently, independence does not mean one being totally independent of others, children will have some degree of dependence on the adults around them. However, that dependence should decrease as the children master skills or attain knowledge. With that said, some researchers suggest children are dependent, vulnerable and incapable of doing much for themselves (Frierson, 2016). Yet, other researchers disagree with Frierson by arguing that, given the right environment and the right tools, children are capable of accomplishing tasks by themselves (Lockhost, Wubbels, & Van Oers, 2010; McFarland & McFarland, 2013; Walls, 2018; Woo, 2014; Lizhu & Xiaoyan. 2005). Based on the

research, it was noted that children's levels of independence may fluctuate with different situations. For example, children who can do much for themselves at school may not do anything for themselves around their parents.

Parental Effects on Children's Independence

Parents play a crucial role in developing and fostering independence in children (Sunarty & Dirawan, 2015). Classroom teachers can enhance what the parents have nurtured at home. Some children are independent at home but not necessarily at school. Likewise, some children might be independent at a particular time of the day but not at other times. That said, parenting styles and parenting goals can foster a child's dependence (Lillard, 2007; Mcfarland & Mcfarland, 2013; Sunarty & Dirawan, 2015; Walls, 2018). Mcfarland and Mcfarland (2013) note that "when adults make unnecessary choices, children forget how to access their inner knowledge and their ability to relate to their authenticity becomes unstable. Instead of learning self-reliance, children learn to rely on others to make their decisions" (p. 37). Therefore, for children to achieve independence, they must be given a chance to make their own choices, make mistakes and learn from them.

Sunarty and Dirawan (2015) also suggest parenting styles may impact children's independence. Their research suggested there are six parenting models used in nurturing, educating, and raising children. These include, positive, democratic, permissive, authoritarian, negative, and derelict. (p. 109). By positive parenting, parents are caring and loving with soothing and encouraging words. Democratic parenting means that parents are good at communicating with their children and laying down their expectations, rational, warm, firm but flexible hence fostering confidence and self-esteem. Permissive parents are very weak in

implementing discipline and are less demanding and decisive in implementing regulations.

Authoritarian was described as low in warmth. They are dictators and set standards that should be followed. Negative parenting was described as parents that are very judgmental, inconsistent, criticizing their children all the time. And derelict parenting was defined as parents that ignore the existence of the child and refuse to listen to the child's feelings or ideas. (Sunatry & Dirawan, 2015) They concluded that the parents who use democratic parenting style tend to have more independent children. Lillard (2007) adds that, "all children benefit from some level of demandingness and control but as children become more competent, adults' continued directiveness becomes negative." (p. 270). When parents are high in control and low in warmth, very demanding of their children and expecting perfection all the time, their children tend to become submissive. The children will always wait for orders from parents. As a result, they become incapable of making any decisions by themselves. This is because they have low self-confidence and are afraid of making any mistakes.

Children need space, time, and patience from the parents if independence is to be achieved (Jensen, 2013; Woo, 2014). These researchers recognize that when parents expect perfection, children's independence is hindered. They agree that perfection should not be the goal. Instead, the process is more important. Woo (2014), gives an account of her toddlers' love for dressing themselves and how they put on multiple pairs of mismatching outfits. She realized that "the joy of dressing oneself successfully sows seeds of confidence. And that matters more than a matching outfit." (p. 57).

When parents are educated on Montessori and child development, it is beneficial to the child in their continuance of independence while at home. Parent education is the first step to the

progression of child independence (Haakmat, 2015; McFarland & McFarland, 2013; Sunarty & Dirawan, 2015; Walls, 2018). When parents can slow down and enjoy their time with their children, their lives are often less stressful and filled with more joyful family moments (Tatum, 2016). Overall, independence may help lessen the frequency of frustration, emotional outbursts, and support a child's development of emotional skills that will be beneficial for adulthood.

Benefits of Independence

Independence is correlated with self-regulation, which in return leads to children that can easily follow instructions, focus their attention, and cooperate with peers and teachers (Aras, 2015). When we encourage children to be independent, they begin to gain self-confidence, self-esteem, and self-worth (Dorer, 2018). Not only do children who are in Montessori environment foster the skills to be independent in their everyday tasks, they also are better able to solve a problem without depending upon others. (Ervin et al., 2010). These feelings can lead the child to complete their tasks without help. Confidence is not only raised in cognition, but in emotional intelligence. When the adult gives a child space to understand how they feel, the children will with time learn to deal with their feelings or emotions. (Dorer, 2018). Children in a Montessori environment were better able to understand the effort needed to learn, and reported being more self-directed compared to the non-Montessori peers (Ervin et al., 2010). Montessori has three freedoms to help the child become independent and want to be independent: freedom of choice, freedom of movement, and freedom to repeat (Dorer, 2018). When children are given a routine to follow each day, it helps them remember what is coming next, and can do their tasks without being asked. Children thrive with consistency which is why a routine or schedule is essential (Galindo & Sheldon, 2011; Mcfarland & Mcfarland, 2013).

How to Create Independence

When encouraging independence in a child, having the physical environment prepared to meet the child's needs is essential (Dorer, 2018; Frierson, 2016; McFarland & McFarland, 2013; Lockhost, Wubbels, & Van Oers, 2010; Woo, 2014). The child has a natural desire to know how to do things by themselves as they develop both mental and physical independence (Henson, 2014; Montessori, 1995). In the home environment, the parent needs to observe what the child is trying to accomplish and allow the time and space for them to complete the task on their own (Montessori, 1995; Tatum, 2016; Walls, 2018). It can be difficult in our fast-paced world to slow down and allow the child a chance to accomplish a task, like putting their things away once they arrive home, but the sense of pride that the child feels contributes to their self-confidence (Karna, 2016). A key ingredient in the facilitation of an independence focused environment is a parenting style that incorporates lowering expectations and allowing the child to make mistakes (Tatum, 2016). A child who has been given opportunities to practice self-regulation is going to be able to be an active problem solver when they encounter a new or unexpected issue when attempting to complete a task independently (Aras, 2015). If the child is interested in putting laundry away, the parent needs to give the child the space to be able to do so, even if it is not done with the same neatness that the parent would achieve. The child needs to be encouraged to become an active part of the family, not merely someone who exists in the same space. Giving young children choices within reason, the choice between two sets of clothes, for example, can provide the child great confidence in making a decision that is also in line with the goals the adult (Karna, 2013; Tatum, 2016; Woo, 2014). The elementary aged child can be given more responsibility, for example, they can be given choices and access that allow them to pack their

lunch. Creating an environment that enables the child to be independent increases a child's self-confidence and ability to self-regulate.

Summary

There is a need for research regarding how teachers can guide children to independence in the classroom and how parents can support that independence at home. For example, according to Lockhost, Wubbels, and Van Oers (2010), Society, schools, teachers, and parents emphasize the importance of pupils' developing independence. Although this objective is clearly stated in many school platforms and statements of aims, how it should, and can, be realized in classroom settings is not so clear. In our opinion, this lack of clarity follows from inadequate definition of what constitutes 'independence' and from an absence not only of theory about the educational conditions that can foster independence but also of practical recommendations for realizing these conditions. (p. 99).

Our research is designed to investigate how parent education on fostering independence in the home affects what we are already doing to foster independence in the classroom. Our research is meant to fill the gap in the existing body of literature on children independence in general. We specifically focus on how parents at home can help foster or reinforce what we do at school. Our review of existing literature indicates that no research in the Montessori environments has been done to examine the link between independence in school and independence at home.

Methodology

To answer the research questions, the study was designed to collect baseline data on students' independence before the intervention began. Once the intervention started, parents

were provided with literature about the benefits of giving children independence and then the parents observed their children at home for five weeks and assessed changes in behavior.

Therefore, the study design used for this research was the *before and after design* or *pre- and post-assessment study design*.

Data Collection Tools

The researchers collected qualitative and quantitative data using the mixed methods approach. Four data collection methods were used, which included: survey method using a questionnaire (pre/post-assessment form), student observation, journaling (teacher reflection journals) and interview (student behavior self-assessment). Below is a description on how the data was collected under each method:

Pre/post assessment survey form. Survey questionnaire forms (see Appendix A) were completed by parents at home before and after the teacher/researcher intervention. The intervention involved sending five articles to parents on tips of how to foster and reinforce independence at home. For five weeks, parents tried out ideas contained in the articles sent home by the researchers. The three researchers sent the same articles to the respective parents. After five weeks, parents were asked to complete the post-assessment questionnaire or form. The form was similar in structure and questions as the pre-assessment form. The goal was to record any observable changes over the five weeks.

The pre and post-assessment forms were created as Google forms, which enabled the parents to fill out the forms online. Parents for all three research sites were provided the same Google form link which allowed the data to be compiled in a single Google Excel document. Google forms provide the summary of the data in the form of pie charts, individual data and the

option to download all data in Excel form. The researchers downloaded Excel files for the pre and post-assessment surveys as separate files.

Responses for each survey question was assigned a code for purposes of analysis. For instance, a

question “My child contributes to the household”, the responses were coded as:

Never	1
Rarely	2
Sometimes	3
Often	4
All of the time	5

Data from all three sites were analyzed as described in the data analysis section of this report.

Observation form. During the five weeks period, daily observations (see Appendix B) done by the teacher/researcher in their respective classrooms. All students in the classroom were observed, specifically looking out for improvement in independence; increase or decrease in self-regulation and self-confidence. Daily observations were recorded on the teacher observation forms.

Teacher reflection journal. Teacher/researchers reflected on a weekly basis, the activities and observations noted in the classroom and the reflections were entered into a journal.

Student behavior self-assessment. In addition to observing and assessment at home by parents, teacher/researchers completed a self-assessment interview (see Appendix C) with students where the teacher/research read out aloud to the primary students’ questions to which they answered yes or no. This data was collected three times, at the beginning, mid-way through

the research process and at the end of the research using the behavioral student self-assessment form. Lower elementary students completed the self-assessment interview forms independently, that is without the teacher/researcher reading out to them.

Key variables

For purposes of this research, independence and self-regulation dependent variables at home were operationalized as a child:

- a) Packing their lunch
- b) Preparing food (simple)
- c) Opening or serving a snack
- d) Doing or folding laundry
- e) Cleaning up their messes
- f) Getting their own drink
- g) Getting their own art supplies at home
- h) Taking a bath/shower (that is, they wash their body)
- i) Brush their teeth
- j) Brush their hair
- k) Pick up their cloth

- l) Needing no or minimal help dressing up

For all both elementary and primary students, the dependent variables ‘independence and self-regulation’ in the classroom were operationalized as a child:

- a) Being able to get out of the car
- b) Putting on and taking off shoes
- c) Putting away personal belongings to Cabbie
- d) Choosing a work/an activity to do
- e) Cleaning up and putting work on the right shelf
- f) Working without bothering others
- g) Completing work in a timely manner
- h) Serving snack and washing plate/cup

For elementary students only, the following dependent variables were observed in addition to the ones above:

- i) Taking care of belongings, for example: jackets, lunchbox, water bottles
- j) Patiently waits for his/her turn to use a material
- k) Complete assignments/projects/homework independently and on time
- l) Making simple decisions like when to go to the bathroom, etc.

Population and sample

The study was conducted in three schools. The first school is a private Montessori school with over 170 students. The teacher-researcher focused on one of the primary classrooms with 24 students as the sample. The students' ages range from 3 to 6 years, with 11 girls and 13 boys. The first classroom population is mostly white, with 20 white students, three African Americans and one Asian American. The second is a charter school in central North Carolina that has 255 students. The teacher-researcher focused on one lower elementary classroom. The students are between the ages of 6 and 9 years old, with 31 students as a sample. The third school is a private school in North Carolina and has 88 students, but the teacher-researcher is focused on one primary classroom with 22 students as a sample. The students are between the ages of 3 and 6.

Procedure for data collection

Before engaging in data collection, permission was secured from the administrators to collect data in each schools. Then permission was obtained from parents and the researchers started collecting data. Before collecting data, a pre-assessment form was sent home that focused on the child's independence at home, this was completed by parents before our intervention. The form of intervention was sending articles to parents (see Appendix D). These articles were about the benefits of independence in the home. They were meant to give parents tools on creating an environment that fosters children independence at home. Articles were sent out for five consecutive weeks and sent out the post-assessment form at the end of five weeks.

In the classroom, the teacher researchers made daily observations, using the observation data forms, completed a behavioral self-assessment interview with students where the teacher/research read out aloud to the primary students' questions to which they answered yes or no. Lower elementary students completed the self-assessment interview forms independently,

that is without the teacher/researcher reading out to them. Also, through the teacher reflection journal, the teacher/researchers reflected on a weekly basis, the activities and observations noted in the classroom, and the reflections were entered into a journal.

Data analysis tools, techniques, and protocols

Tools used for collecting data were pre/post assessment survey form, observation form, behavioral student assessment form, and teacher journal.

Pre/post assessment survey. The pre and post-assessment forms used to collect the pre/post-assessment data are available under appendix A. The researchers downloaded Excel files for the pre and post-assessment surveys as separate files. Each survey question response, appropriate codes were entered in the Excel spreadsheet for pre and post-assessment. The researchers generated tables and charts for the different questions for pre and post assessment surveys. Changes in response between pre and post-assessment surveys for each question were compared to determine if the parents' intervention has made significant changes to the students' independence and self-regulation as evidenced through the different behavior activities measured.

Observation form. The Observation form (see Appendix B) used qualitative data analysis involving creating of codes from the teacher's reflection journals. All researchers observed students on a daily basis looking for evidence of independence and self-regulation activities like getting out of the car by themselves, working without interrupting others and others evidence of executive function.

Documentation of Teacher reflection journal. For teacher reflection, no standardized tool was used to collect data. Researchers simply took notes of their observation about children's

independence. - Researchers created codes from the journal notes taken by Montessori guides during weekly classroom observations.

Student behavior self-assessment. For the behavioral assessment (see appendix C), we collected data before the intervention, in the mid-research period (third week) and at the end of the research period. We entered the data into an excel sheet and compare pre, mid and post data. We compared changes to see if the parent involvement at home made significant changes to the students' independence and self-regulation as evidenced through the different behavior activities measured.

Data analysis tools discussion

The data analysis tools, techniques, and protocols for each method are described below.

Pre/post assessment survey

The first step in the data analysis process was generating tables or charts for each question on the pre and post assessment surveys. The tables and charts visually showed parents' responses to the different items. The next step in the analysis involved comparing changes in response between pre and post-assessment surveys for each question to determine if the parents' intervention made changes to the students' independence and self-regulation levels. The changes were tracked through different behavior activities, which formed the *dependent variables* for this method. The independent variable is the *parents' involvement*. The dependent variables are: *packing their lunch; preparing food (simple); opening or serving a snack; doing or folding laundry; cleaning up their messes; getting their own drink; getting their own art supplies at home; taking a bath/shower (that is, they wash their body); brush their teeth; brush their hair;*

picking out their clothes, and needing no or minimal help dressing up. For each dependent variables (or question), the researchers determined the *mean* or *average* for the different responses (*never, rarely, sometimes, often, all of the time*) for pre and compared it with the *mean* or *average* responses for the post-assessment.

Observation method

Qualitative data analysis was used, it involved creating codes from the notes on the observational forms (see appendix B). The goal was to determine where changes were evident in students' *independence and self-regulation*. The three researchers coded the merged data and compared the codes and themes.

Teacher reflection journal

Documentation of qualitative data analysis involved creating codes from teacher reflection journals taken for weekly classroom observations. For teacher reflection, no standardized tool was used to collect data. Researchers simply took notes of their observation about children's independence. Researchers observed students on a weekly basis looking for evidence of *independence and self-regulation* through dependent variables like *self care, choosing work and completing it, levels of concentration, etc.* The researchers tracked and compared any changes in the dependent variables from the first week of observation before the intervention through the last week of the intervention. Similar to observation data, the three researchers coded their individual notes independently and compared the codes and themes each one of them comes up with.

Student behavior self-assessment method

For the behavioral assessment, the researchers collected data before the intervention, in the mid-research period (third week) and at the end of the research period. The researchers used the student behavior self-assessment form (see appendix C). The researchers entered the data into an excel sheet and compared pre, mid and post data. The researchers examined changes to see if the parent involvement at home made significant changes to the students' independence and self-regulation as evidenced through the different dependent variables measured.

Findings

In this section, the researchers present the findings of the study conducted in the three schools. The first school is a private Montessori school with over 170 students. The teacher-researcher focused on one of the primary classrooms with 24 students as the sample. The second is a charter school in central North Carolina that has 255 students. The teacher-researcher focused on one lower elementary classroom. The students are between the ages of 6 and 9 years old, with 31 students as a sample. The third school is a private school in North Carolina and has 88 students, but the teacher-researcher was focused on one primary classroom with 22 students as a sample. The students are between the ages of 3 and 6.

Below is the graph (figure 1) of the response rate for pre and post assessment. There was a great response rate of an average of 84% from two schools and a very poor response rate from the third school with zero response rate in the post assessment survey. It was discovered that parent communication can be a challenge, it takes a lot of patience and commitment.

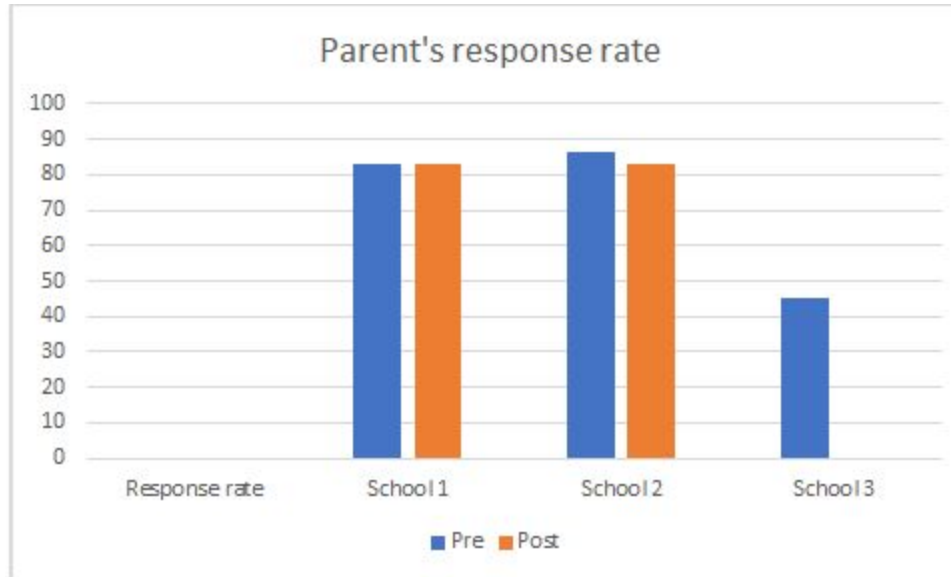


Figure 1: shows parents response rate from the pre-assessment and post-assessment.

The overarching question the researchers set out to answer is: *What effects will parent education have on students in a primary or lower elementary classroom and their levels of independence and self-regulation?* The specific research questions are:

- 1) Does parent education by Montessori educators in fostering *independence and self-regulation* at home translate into *students' independence and self-regulation* in a Montessori Classroom?
- 2) If yes in 1), in which areas do student show progress towards *independence and self-regulation* after parental involvement in fostering independence and self-regulation at home?
- 3) How can teachers support parents' involvement in fostering independence at home?
- 4) What role does the prepared environment (e.g. child-size tools, few choices, accessibility, etc) at home and in the classroom play in fostering a child's independence?

- 5) Are children more independent at school more than at home?
- 6) What is the role of Montessori guides' involvement in the attainment of students' independence and self-regulation in a Montessori Classroom?

Data sources

Parent education and children independence

Research question 1 focused on how parent education by Montessori educators to foster *independence and self-regulation* at home can translate into *students' independence and self-regulation* in a Montessori classroom. This question was important to the researchers because parents play a critical role in reinforcing what Montessori guides do in the classroom. It was the main research question in the sense that, the researcher wanted to determine how they could educate parents on ways to foster independence by providing Montessori resources with proven tools for cultivating independence among children. Data to answer this research question was collected using a mix of the four data tools.

Below are the tables showing the data from pre-post assessment survey. The tables show how children's independence and self-regulation changed over five weeks. The changes were monitored through a number of dependent variables.

For purposes of our research, *independence and self-regulation* dependent variables at home were operationalized in the *pre and post-assessment forms* as a child: *packing their lunch; preparing food (simple); opening or serving a snack; doing or folding laundry; cleaning up their messes; getting their own drink; getting their own art supplies at home; taking a bath/shower*

(that is, they wash their body); *brush their teeth; brush their hair; pick up their cloth, and needing no or minimal help dressing up.*

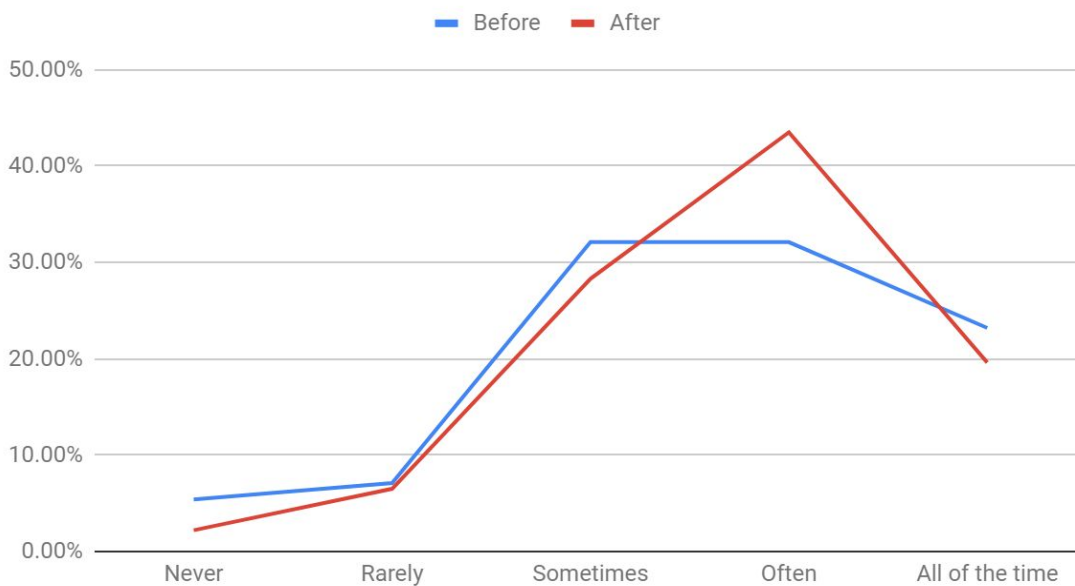
For both elementary and primary students, the dependent variables ‘independence and self-regulation’ in the classroom were operationalized as a child: *being able to get out of the car; putting on and taking off shoes; putting away personal belongings to cubbie; choosing a work/an activity to do; cleaning up and putting work on the right shelf; working without bothering others; completing work in a timely manner, and serving snack and washing plate/cup.*

For elementary students only, the following dependent variables were observed in addition to the ones above: *taking care of belongings (jackets, lunchbox, water bottles); patiently waits for his/her turn to use a material; complete assignments/projects/homework independently on time, and making simple decisions like when to go to the bathroom, etc.*

Findings for each variable are presented below in tables:

a) **Figure 2:** helps pack their lunch

Response	Before	After
Never	30.4%	0%
Rarely	25%	2.2%
Sometimes	28.6%	43.5%
Often	12.5%	39.1%
All of the time	3.6%	15.2%

b) **Figure 3:** puts dishes away after meal/snack**Puts dishes away after meal/snack**

c)

Figure 4: helps prepare food

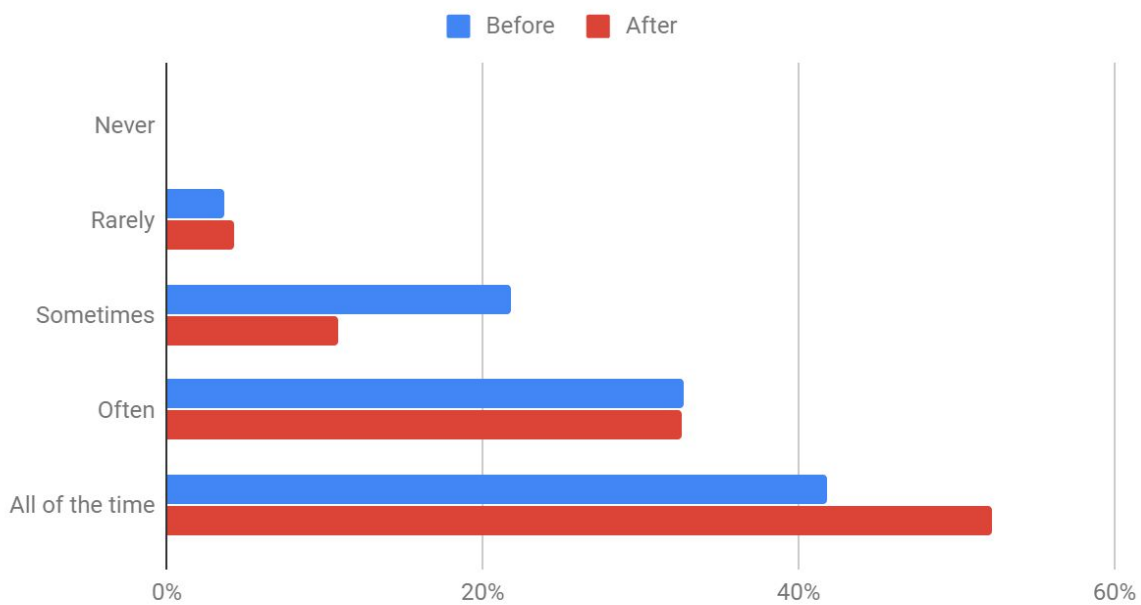
Response	Before	After
Never	8.9%	0%
Rarely	17.9%	15,2%
Sometimes	55.4%	54.3%
Often	14.3%	30.4%
All of the time	3.6%	0%

d) **Figure 5** : contributes to doing/folding laundry

Response	Before	After
Never	8.9%	8.7%
Rarely	30.4%	28.3%
Sometimes	28.6%	34.8%
Often	19.6%	19.6%
All of the time	12.5%	8.7%

e) **Figure 6** : gets their own drink of water

Gets their own drink of water



f) **Figure 7:** takes a bath/shower independently (washes own body)

Response	Before	After
Never	3.6%	2.2%
Rarely	5.5%	2.2%
Sometimes	18.2%	23.9%
Most of the time	29.1%	23.9%
Always	43.6%	47.8%

g) **Figure 8 :** brushes teeth independently (with supervision)

Response	Before	After
Never	1.8%	0%
Rarely	1.8%	0%
Sometimes	8.9%	10.9%
Most of the time	26.8%	21.7%
Always	60.7%	67.4%

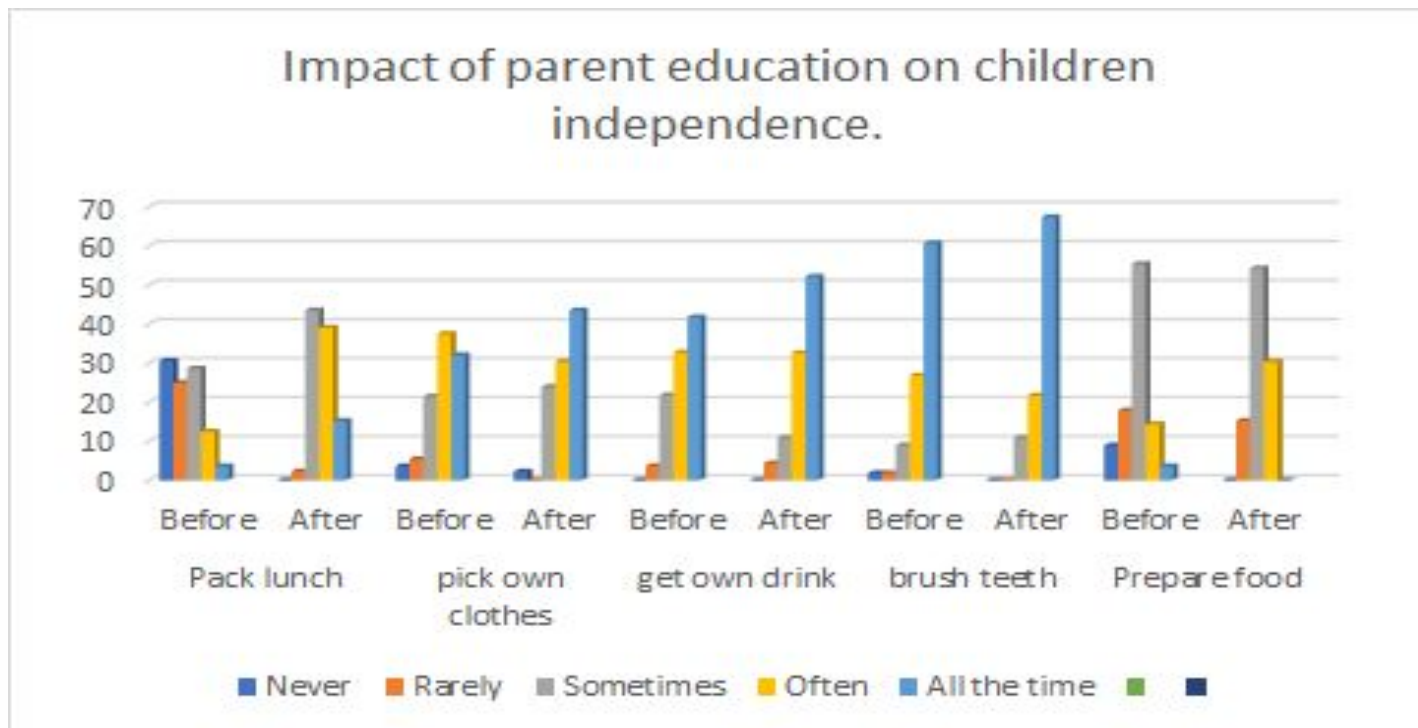
h) **Figure 9:** brushes own hair

Response	Before	After
Never	16.1%	8.9%
Rarely	14.3%	13.3%
Sometimes	28.6%	28.9%
Most of the time	23.2%	22.2%
Always	17.9%	26.7%

i) **Figure 10:** child picks out own clothing on a regular basis

Response	Before	After
Never	3.6%	2.2%
Rarely	5.4%	0%
Sometimes	21.4%	23.9%
Most of the time	37.5%	30.4%
Always	32.1%	43.5%

We learned that, parent education can translate to improved independence at home. This is shown in graph below (Figure 11).. It is evident that from the pre and post assessment, we see more children starting to become more independent at home. For example from the following graph (**Figure 11**), before the intervention, 30.6% children never got involved in packing their lunch compared zero percent at the end of the intervention. At the end of intervention, the research shows every child starting to help pack their lunch. In addition, the researchers saw an increase in the number of elementary aged students who were choosing their own clothes, 33.3% at the beginning compared to 41.4% always taking care of their own belongings at home.



j) **Figure 11:**(analyses the changes in the dependent variables from pre and post assessment surveys)

We also learned that independence at home can translate to more independence and self regulation in the Montessori classroom. For example, from the behavioral student self assessment data completed at the beginning of the research period, 64.4% of the three to six year old students said that they could get out of the car by themselves compared to 73.9% at the end of the research period, (figure 12). And when asked if they could complete work by themselves, 84.8% of the primary students said that they completed work by themselves compared to 91.3% at the conclusion (figure 13).

k) **Figure 12:** being able to get out of the car

Response	Before	Halfway	After
Yes	64.4%	71.7%	73.9%
No	35.6%	28.3%	26.1%

l) **Figure 13:** complete work independently:

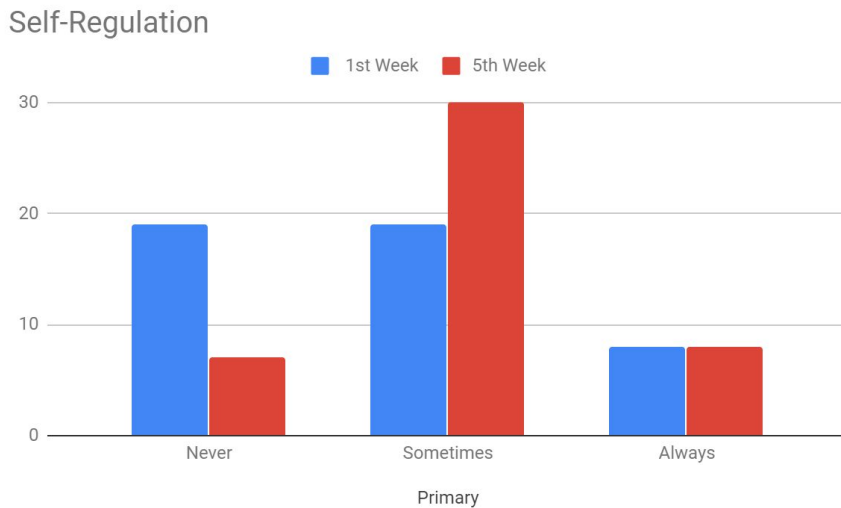
Response	Before	Halfway	After
Yes	84.8%	82.6%	91.3%
No	15.2%	17.4%	8.7%

The researchers used the students' behavioral self assessment tool saw an improvement in students' self regulation especially at the elementary level after the intervention. For example, as shown in the table below (Figure 14), 14.3% students said they would rarely work without disturbing others, compared to 6.7% at the end of the survey.

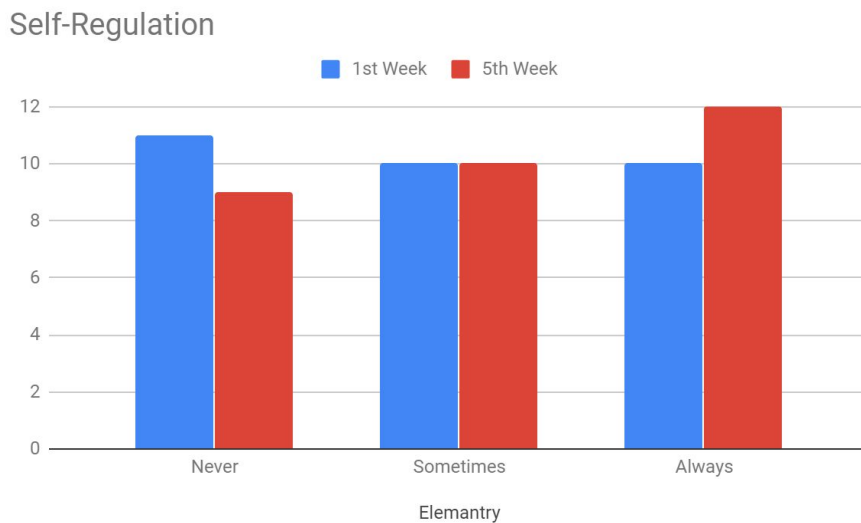
m) **Figure 14:** works without disturbing others

Response	Before	Halfway	After
Rarely	14.3%	16.7%	6.7%
Sometimes	42.9%	40%	43.3%
Always	42.9%	43.3%	50%

From the graphs (figure 15 and figure 16) below, lower elementary students showed more self regulation than primary (three to six age group) students.



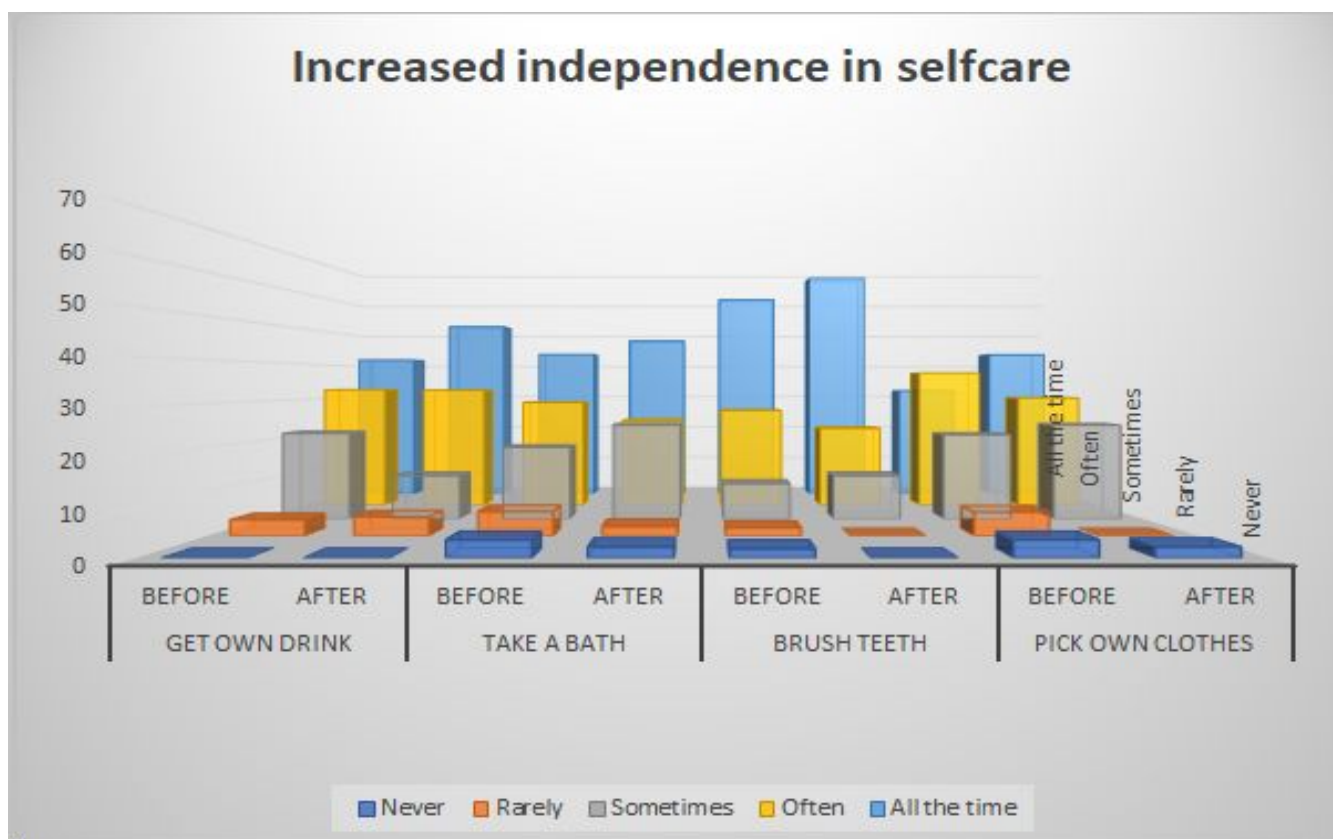
n) **Figure 15:** shows self regulation first week to last week in a primary classroom.



o) **Figure 16:** shows self regulation from the first week to last week in an elementary classroom.

Areas student show progress towards independence. Research question two addressed the areas where children make the most progress after the researchers' intervention and improved parent involvement. This question was important to the researchers because they wanted to see where the parents' focus was and what needed to be worked on in the classroom. learned that

children became more independent in taking care of themselves and their personal needs (self care needs) after the intervention as shown in the following graph (figure 17). For example 40% students always poured their drink before intervention compared to 50% at the end of the survey, 30% students always picked out their clothes compared to about 45% at the end of the survey. So there was especially an improvement in self care skills after five weeks of intervention.



p) **Figure 17** : shows children's increased independence in self care and personal needs.

Teacher supporting parents' involvement. Research question three focuses on ways the Montessori guides can help parents with tools to reinforce independence at home. This research question was important to the researchers because some parents are willing to help and work with their children at home to achieve independence and self-regulation but they do not

know how. From (figure 11), the researchers saw an improvement in children independence at home after the researchers' intervention. Although there were some challenges with parent communication and getting responses on time, data results indicated that parents are coachable and they want to learn how to help reinforce what is done at school but for most part they do not know how. The data confirmed that some of the parents read the literature the researchers sent home and applied what they learned from the articles. Montessori teachers can support parents by giving them tools to implement Montessori at home. The researchers plan to do more parent education events, encourage parents to observe their children working in the classroom and share educational materials like articles with them at least once a month.

Role of prepared environment. Research question four focused on the role of the prepared environment in achieving a child's independence and self regulation. For purposes of this research a prepared environment means: there are child sized tools, accessibility to materials and supplies, giving children time and space to do for themselves, room for mistakes, patient and less imposing adults, and clear boundaries. This question was important to researchers because from the review of the literature and the Montessori philosophy, the prepared environment has been proven to play a very big role in increasing a child's independence and self regulation abilities. (Woo, 2014: Jensen. 2013). From this research, researchers reaffirmed, the prepared environment plays a great role in children' attainment of independence. The researchers learned from parents that, it was a struggle before intervention to get their children help at home. After reading the articles and changing their home environments to fit their children's needs, the children were excited and eager to help. The parents confessed to the researchers that, they didn't realize that all they had to do was equip their homes with child sized tools, stepping tools for

accessibility and to give their children time and space. From the articles, the parents learned that mistakes were part of learning so they relaxed a bit, gave their children more access to supplies. Before intervention 50% parents said their children had access to supplies like markers and paper compared to 73.9% at the end of the survey. (Figure 18)

q) **Figure 18:** has access to materials (paper, markers, etc.)

Response	Before	After
None	0%	0%
Some	5.4%	2.2%
Quite a bit	30.4%	15.2%
A large amount	14.3%	8.7%
All needed	50%	73.9%

Children independence at school and home. Research question five focused on the question whether children are more independent at home than at school. This was important to the researches because the researchers are aware that children can behave differently in different environments. When the assumption is that the child is capable of being independent, the researchers wondered if that impacted the child's level of self-regulation and independent thinking. The researchers were not able to see a significant disparity between children's independence at home and at school. From the data collected, the researchers were able to conclude that whether at home or school, the environment plays a crucial role in a child's independence.

After the intervention, most of the parents who participated reported to the researchers that they made a few changes in their homes, for example buying child sized tools and giving

their children more time, space and access to materials. The researchers saw improvement in some areas both at home and school during and after the intervention. For example using the student behavioral assessment tool (Figure 19), 97.8% of three to six age group students said they were able to put on and take off shoes independently before intervention, compared to 100% at the end of the survey. And 26.7% of the elementary students said they rarely made weekly work plans at the beginning of the survey compared to 13.3 % at the end of the intervention. (Figure 20)

Researchers learned that at the beginning of the survey, 66.1% students were able to dress and get ready independently, and that number increased to 73.9% at the end of the survey. (Figure 21.) From the data results, researchers saw an improvement in children's independence at home and at school but were not able to establish if children are more independent at school than at home. What remained clear was that, the environment plays a big role in a child's independence and self regulation.

r) **Figure 19.** Putting on and taking off shoes

Response	Before	Halfway	After
Yes	97.8%	100%	100%
No	2.2%	0%	0%

s) **Figure 20.** plans weekly works independently

Response	Before	Halfway	After
Rarely	26.7%	20%	13.3%
Sometimes	43.3%	36.7%	40%
Always	30%	43.3%	46.7%

t) **Figure 21:** when getting dressed, child needs help with

Response	Before	After
All of it	1.8%	0%
Most of it	0%	0%
Some of it	7.1%	2.2%
A few items	25%	23.9%
No help needed	66.1%	73.9%

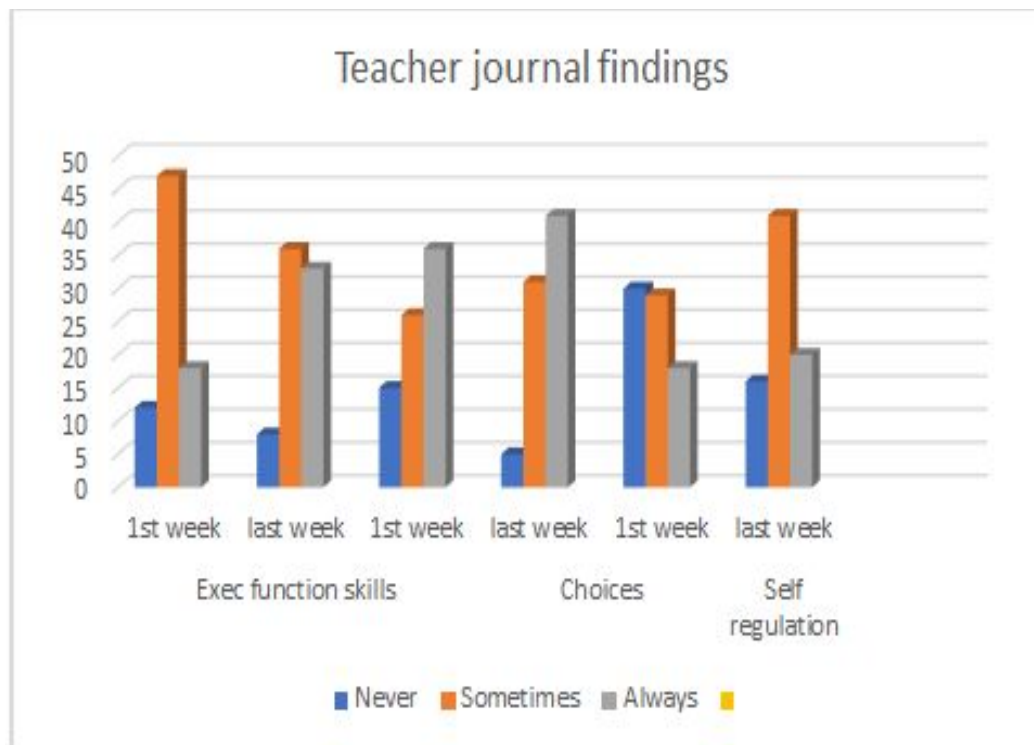
The researchers noted too, that in some cases there was no significant change in the dependent variables especially in the three to six age group. For example, using the student behavioral assessment tool, 78.3% primary children said they were able to choose a work independently at the beginning of the survey, and that number stayed the same by the end of the survey. (Figure 22).

u) **Figure 22:** Choosing a work/an activity to do

Response	Before	Halfway	After
Yes	78.3%	76.1%	78.3%
No	21.7%	23.9%	21.7%

Roles of Montessori guides in independence. Research question six focused on the role Montessori guides play in fostering children independence and self regulation. This question was important to researchers because Montessori guides and parents are the most important adults in a child's life. The Montessori guides spends a significant amount of time with the children so the

Montessori guides play an important role in fostering children's independence and self regulation. This question was answered by the data collected through behavioral, observation form and teacher journal. From this research, the researchers learned that a Montessori guide is the bridge between a child's home and school. The children need consistency at home and at school. The Montessori guide prepares the environment, introduces the lesson, and gives the children the space and time to practice, make mistakes and then self correct until they master the lesson. The researchers learned that the skills children acquired from home have to be reinforced in the classroom and the skills acquired in the classroom need to be reinforced at home if the children are to achieve independence. The researchers learned that parents and teachers have to work together for the benefit of the child. During the five week intervention, as some of the parents got involved, the Montessori guides saw a great improvement in children's choices, self regulation and executive function skills. From the teacher journal tool, researchers found that at the beginning of the survey, only 23.4% (18) students always exhibited executive function skills compared to 42.9% (33) students at the end of the survey. (Figure 23)



v) **Figure 23:** shows observational notes of students executive function skills, choices, and self regulation difference from the first week to the last week.

Conclusions

In this section, the researchers present their conclusions and recommendations based on the findings of the study. First, are the conclusion, followed by the recommendations.

Conclusions

The researchers came up with eight conclusion :

- 1) Independence at home can translate to more independence and self-regulation in the Montessori classroom. For example, at the beginning of the research period, 64.4% of the three to six year old students said that they could get out of the car by themselves compared to 73.9% at the end of the research period, and when asked if they could complete work by themselves,

84.8% of the primary students said that they completed work by themselves compared to 91.3% at the conclusion.

- 2) Learned parents are eager to implement what the researchers do in the classroom, but they just don't know how. This was shown by the response rate which averaged to 84% in the two Montessori schools for both pre and post assessment. The response rate unfortunately was poor in the third school, with zero response in the post assessment survey.
- 3) Parents knowledge improved and they were eager to implement the ideas they learned from the articles. This confirmed that parents are coachable, if you have the time and commitment to give them the resources that can guide them to help their children to independence.
- 4) This study gave the researchers an opportunity to connect at a deeper level with the parents and students and to get to know them.
- 5) The researchers received positive feedback from parents about the articles and some emailed the researchers with the activities they were trying out at home with their children. Some of these activities were what the researchers had included in their pre and post assessment as dependent variables, and they included among others, folding laundry, helping pack their lunches, taking a bath independently, and so on.
- 6) Communicating to parents and getting their response. It requires patience, commitment and constant reminders because most of the parents are very busy.
- 7) Parent involvement makes a difference in children independence and self-regulation in the Montessori classroom. The researchers observed positive changes in children independence for example eagerness to help clean the classroom in the three to six age group after the researchers started the intervention. And the researchers saw an increase in the number of elementary aged

students who were choosing their own clothes, 33.3% at the beginning compared to 41.4% always taking care of their own belongings at home.

8) Elementary children exhibited more improvement in self-regulation than primary students.

When the elementary students, ages 6-9 years old, were asked if they stayed on task throughout the morning work cycle, at the beginning of the research 40% said they were always able to, 50% were sometimes able to, and 10% were rarely able to stay on task. At the end of the research, 50% said they were always able to focus and complete their work, 43.3% were sometimes able to, and 6.7% were rarely able to maintain focus.

9) A prepared environment plays a crucial role in children independence and self-regulation.

(Woo, 2014: Jensen, 2013 and McFarland, S., & McFarland, J. (2013) agreed that an environment plays a big role in a child's independence. When children have the right tools and environment, they can accomplish a lot of tasks by themselves. The environment includes patient adults who give children space and time to do for the themselves. The articles the researchers shared with parents were mostly to give them skills and tools on how to make their home environments child friendly and accessible to children. The response from the parents was overwhelmingly positive. A few changes made at home could bring a difference. Their children were eager to help at home and to do activities for themselves because they had provided child-sized tools, and given them easy access to supplies.

10) The researchers had to use different modes of communication if they were to get a good response rate from parents. The researchers sent the pre and post assessment forms via email but they also printed hard copies to cater for parents who are not technology savvy.

Recommendations

Based on the findings of the research, the researchers offer the following recommendations.

Include parent education about creating an environment that promotes independence in the home at the beginning of the year, this information could be sent out over the summer for parents to review before the beginning of the school year.

- 1) During the first parent-teacher conference, spend time talk with parents about how they can best support their child by given the child more responsibility and give them more independence.
- 2) Further research could consider face to face education events with parents. It's hard to tell if parents read all the literature the researchers send at home. And for legitimate reasons, parents are very busy and too tired after a long day of work to have time and energy to read long articles. The researchers tried to find shorter and easier articles to read but sometimes they could not find easy read articles that had the message the researchers wanted the parents to read.
- 3) Further research could be done over a long period of time maybe six months to a year to see if it could have a bigger impact and if parents' participation improves. Five weeks was too short to expect big changes especially with primary children (three to six years).
- 4) Further research could consider adding home visits to the research. This could mean maybe choosing a smaller scale for example the children who need more help or parents who need more help with their children's independence.

- 5) At the beginning of the school year send home an informational packet of Montessori and the benefits of independence at home. Within that packet include background information on Montessori.
- 6) Send home helpful ways the parents can let their child be independent. For example: help pack their lunch, help make dinner, keep their toys at a level they do not need to ask for help to play with them, etc.

Future plans

The researchers are planning to put more emphasis on parent education nights and where possible work with administrators to make home visits. The research puts an emphasis on parent education as the first step to progression of independence in children. (Haakmat, 2015; McFarland & McFarland, 2013; Sunarty & Dirawan, 2015; Walls, 2018). The researchers learnt that, many parents want to help but they do not know how. They also observed that, the articles can be effective but it's hard to keep track of which parents actually read the articles. Going forward, the researchers will continue sending more articles at home, but they want to put more emphasis on face to face parent education nights and where possible home visits.

The researchers also plan to work with administrators to have parents come into the classrooms more often and watch their children work. Most of the parents see their children as incapable of doing for themselves until they see them in the classroom working on activities independently. The researchers hope that, as more parents see their children working in the classroom, they will have more courage to involve them at home. This is well supported by the research for example. Woo (2014) observed that:

“Few parents would ever dream of letting their young toddler use a knife, scrub tables, or clean windows. Most parents have never seen it done, while others do not know how to engage their toddler in participating in these activities. But, if you visit a toddler Montessori classroom, you will witness children as young as 18 months slicing bananas, dusting shelves, and washing dishes. Children are capable. the only thing they need is the opportunity.” (p. 55).

We hope our research and the action we hope to take will further enhance parent involvement in reinforcing children independence at home. The researchers hope to utilize parent conferences to have more conversations about independence and can help reinforce their children independence at home.

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Appendices

Appendix A: Pre and post-assessment forms

Action Research Question: What effect will parent education have on students in a primary or lower elementary classroom and their levels of independence and self-regulation?

My child contributes to the household.

Never	Rarely	Sometimes	Often
All of the Time			

My child helps pack their lunch

Never	Rarely	Sometimes	Most of the Time
Always			

My child packs their lunch without help

Never	Rarely	Sometimes	Most of the Time
Always			

My child has access to supplies they might need (i.e. paper, markers, _____)

None	Some	Quite a Bit	An Extreme Amount
All			

My child puts their dishes away after a meal/snack

Never	Rarely	Sometimes	Most of the Time
Always			

My child helps prepare food.

Never	Rarely	Sometimes	Most of the Time
Always			

My child has access to snacks and will try to open without help

Never	Rarely	Sometimes	Most of the Time
Always			

My child contributes to doing/folding laundry

Never	Rarely	Sometimes	Most of the Time
Always			

My child cleans up their messes

Never	Rarely	Sometimes	Most of the Time
Always			

My child gets their own drink of water

Never	Rarely	Sometimes	Most of the Time
Always			

Self-Care:

My child takes a bath/shower independently (i.e. they wash their own body)

Never	Rarely	Sometimes	Most of the Time
Always			

My child brushes his/her teeth independently (with supervision)

Never	Rarely	Sometimes	Most of the Time
Always			

My child brushes his/her hair

Never	Rarely	Sometimes	Most of the Time
Always			

My child picks out their clothes on a regular basis

Never	Rarely	Sometimes	Most of the Time
Always			

In general, when getting dressed, my child needs help with:

All of it	Most of it	Some of it	A few items	No
help needed				

Appendix B: Observational forms

Action Research Question: What effect will parent education have on students in a primary or lower elementary classroom and their levels of independence and self-regulation?

Classroom Observational Data

Teacher use only

Name: _____

1. The child washes their hands
without being asked. _____
2. The child goes to the bathroom
without asking. _____
3. The child cleans up their work
before starting another one. _____

Name: _____

1. The child washes their hands
without being asked. _____
2. The child goes to the bathroom
without asking. _____
3. The child cleans up their work
before starting another one. _____

Appendix C: Student behavior self-assessment

Action Research Question: What effects will parent education have on students' levels of independence and self-regulation in a primary or lower elementary classroom?

Behavioral student self-assessment

Y- Yes

N- No

Behavior	Student self-assessment		
	Pre	Mid	Post
I get out of my car by myself	YN	YN	YN
I can take off and put on my shoes by myself	Y N	YN	YN
I can put away my lunchbox and all my stuff by myself	YN	YN	YN
I can choose my work by myself	YN	YN	YN

I serve snack, eat and wash the plate and cup by myself	YN	YN	YN
I complete my work by myself	YN	YN	YN
I work without disturbing others	YN	YN	YN
I clean up my work and put it back on the shelf by myself	YN	YN	YN
Elementary	Pre	Mid	Post
I choose my work and do it by myself	1 2 3	1 2 3	1 2 3
I stay on task, complete my work on time, clean up and put it back before choosing another work	1 2 3	1 2 3	1 2 3

I choose my clothes at home by myself, I take care of all my stuff like jackets, gloves, lunchbox by myself	1 2 3	1 2 3	1 2 3
I plan my weekly work, and check my journal by myself	1 2 3	1 2 3	1 2 3
I work peacefully without disturbing others	1 2 3	1 2 3	1 2 3
I wait patiently for my turn to use a material	1 2 3	1 2 3	1 2 3
I complete my homework assignments/projects independently and on time	1 2 3	1 2 3	1 2 3
I know what I have to do when I get to the classroom, where to find the supplies and classroom materials when I need them. I don't need to ask the teachers.	1 2 3	1 2 3	1 2 3

1. Rarely.**2. Sometimes****3. Always**

Appendix D: Articles shared with and read by parents

Dorer, M. (2018). Independence: A Montessori journey. *Montessori Life*, 30, 40-45.

Jensen, S. (2013). Bringing Montessori home. *Montessori Life*, 25(3), 56

McFarland, S., & McFarland, J. (2013, Spring). Montessori parenting: An idea whose time has come. *Montessori Life*, 25, 30-39.

Tatum, J. (2016). Realistically applying Montessori in the home: one parent's story. *Montessori Life*, 28(2), 36-38.

Woo, S. (2014, Summer). Creating an amazing Montessori toddler home environment. *Montessori Life*, 26, 54-59.

Appendix E: More tables showing data collected using the behavioral student self-assessment.

For primary students, the dependent variables, independence and self regulation in the classroom were operationalized as a child:

h) Figure 24: Serving snack and washing plate/cup

Response	Before	Halfway	After
Yes	100%	97.8%	97.8%
No	0%	2.2%	2.2%

f) Figure 25: Working without bothering others

Response	Before	Halfway	After
Yes	45.7%	39.1%	52.2%
No	54.3%	60.9%	47.8%

g) Figure 26: Clean up work and return to proper place

Response	Before	Halfway	After
Yes	97.8%	93.5%	100%
No	2.2%	6.5%	0%

For elementary students, the dependent variables, independence and self-regulation in the classroom were operationalized as a child:

i) Figure 28: I choose my work and do it by myself

Response	Before	Halfway	After
Rarely	0%	0%	0%
Sometimes	70%	63.3%	60%
Always	30%	36.7%	40%

j) Figure 29: Stays on task, completes work on time, clean up and put it back before choosing another work

Response	Before	Halfway	After
Rarely	10%	6.9%	6.7%
Sometimes	50%	41.4%	43.3%
Always	40%	51.7%	50%

k) Figure 30: Chooses own clothes at home, takes care of all their stuff like jackets, gloves, lunchbox

Response	Before	Halfway	After
Rarely	23.3%	16.7%	13.8%
Sometimes	43.3%	43.3%	44.8%
Always	33.3%	40%	41.4%