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# Do Students in Montessori Schools Perform Better on Achievement Tests? A Taiwanese Perspective

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## **Do Students in Montessori Schools Perform Better on Achievement Tests? A Taiwanese Perspective**

### **Abstract**

The study examines whether elementary school students in Taiwan who had received Montessori education achieved significantly higher scores on tests of language arts, math, and social studies than students who attended non-Montessori elementary programs. One hundred ninety six children in first, second, and third grade participated in the study. Children's scores were measured by Elementary School Language Ability Achievement Test (ESLAAT), Elementary School Math Ability Achievement Test (ESMAAT), and Social Studies Ability Achievement Test (SSAAT). One-way multivariate analysis of variance (MANOVA) showed that students who had Montessori experience had a significantly higher score in language arts in all three grade levels. In math, first grade students scored higher but not second and third grade students. However, in social studies, students who had received Montessori education did not score significantly higher than the non-Montessori students. There was also no significant difference between the number of years spent in Montessori programs and students' language arts, math, and social studies test scores in first, second, and third grade.

Este estudio examina si estudiantes de una escuela primaria en Taiwán, que habían sido educados en el método Montessori, lograban resultados significativamente más altos en exámenes de lenguaje, matemáticas y estudios sociales, en comparación con aquellos estudiantes que venían de una educación primaria distinta del método Montessori. Participaron en el estudio ciento noventa y seis niños de primer, segundo y tercer grados. Los resultados de los niños

fueron medidos por tres exámenes llamados ESLAAT (el cual mide la habilidad oral en niños de nivel primario), ESMAAT (el cual mide la habilidad matemática en niños de nivel primario), y SSAAT (el cual mide conocimientos en estudios sociales en niños de nivel primario). El análisis unidireccional de múltiples variables (MANOVA) demostró que los estudiantes con experiencia en el método Montessori obtuvieron resultados significativamente superiores en lenguas en los tres grados. En matemáticas, los estudiantes de primer grado obtuvieron resultados más altos, pero los estudiantes de segundo y tercer grado no. Sin embargo, en los estudios sociales, los estudiantes educados con el método Montessori no obtuvieron resultados significativamente más altos que los demás estudiantes educados sin este método. Tampoco se encontró ninguna diferencia significativa entre el número de años pasados en programas Montessori y los resultados de los estudiantes de primer, segundo y tercer grados en lenguas, matemáticas y estudios sociales.

Cette étude examine si des élèves taïwanais de l'école primaire qui ont reçu une formation montessorienne ont des résultats significativement supérieurs à des tests de langue, de mathématiques et de sciences sociales à ceux d'élèves de programmes primaires non montessorien. Cent quatre-vingt-seize enfants de première, deuxième et troisième années ont participé à cette étude. Les résultats des élèves ont été mesurés par l'Elementary School Language Ability Achievement Test (ESLAAT), l'Elementary School Math Ability Achievement Test (ESMAAT) et le Social Studies Ability Achievement Test (SSAAT). Une analyse de variance unidirectionnelle multi variée (MANOVA) montre que les élèves formés selon la méthode Montessori ont des résultats significativement supérieurs en langue aux trois niveaux scolaires. En mathématiques, les élèves de première année ont des résultats supérieurs,

mais pas ceux de deuxième et troisième année. Cependant, en sciences sociales, les élèves formés selon la méthode Montessori n'ont pas de résultats significativement supérieurs à ceux des élèves non-Montessori. De plus, il n'y a pas de différence significative entre le nombre d'années en programme Montessori et les résultats des tests en langue, mathématiques et sciences sociales, en première, deuxième et troisième année.

**Keywords:** Montessori education, Taiwan, student achievement

Montessori education has always been identified as a quality program for young children (Morrison, 2012; Roopnarine & Johnson, 2010). The program is attractive to some parents due to its emphasis on orderliness, independence, self-directed learning, and a calm environment. Montessori education is designed to support the natural development of children in a well-prepared environment through five basic principles: respect for the child, the absorbent mind, sensitive periods, prepared environment, and autoeducation. The Montessori curriculum is made up of five subjects: practical life, sensory experience, mathematics, language, and cultural studies.

Compared to traditional early childhood programs, Montessori education provides children with more sequential learning activities and opportunities to learn academic subjects such as mathematics, writing and reading at an earlier age than children who are in non-Montessori education (Torrance & Chattin-McNichols, 2009).

### **Montessori Education in Taiwan**

Currently, there are about 1,330 accredited Montessori preschools and kindergartens in Taiwan (Cheng, 2008; Chinese Montessori Foundation for Early Childhood Educational Research, 2008). The history of Montessori in Taiwan began in 1978. The first school was

founded by Sister Heng Yu (Y.H.Yu, first author personal communication, September 22, 2009), who received formal training in Montessori in Italy. Later in 1985, she established the Chinese Montessori Foundation. This foundation provides educational services for children with learning disability.

Montessori education in Taiwan has its own standards, goals, and contents which are aligned with the local needs and culture. The program emphasizes fostering good habits and enhancing children's moral development using Mandarin as a medium of instruction (Ministry of Education, 1987). Although preschool and kindergarten are not compulsory in Taiwan (Tu, 2007), parents put a high priority on early education as a way to make sure their children will have a successful transition to elementary education. Researchers have found that a large percentage of Taiwanese parents believe that private early education is better for their children (Cheng, 2008; Wei, 2007; Yeh, 2007).

Wei (2007) noted that, in Taiwan, private kindergarten makes up 75% of the early education program, including Montessori schools. Wei (2007) further claimed that Montessori education more effectively provided children with more sequential learning activities and opportunities to learn key academic subjects, such as mathematics, writing, and reading at an earlier age than in non-Montessori schools. According to Chou (2007), parents in Taiwan prefer to enroll their children in a kindergarten that offers many subjects to enhance the children's readiness to go to the first grade. Chou (2007) also found that more parents want their children to master English language early in their education, which can be accomplished in Montessori program.

Taiwanese parents also believed that because Montessori schools group children in multi-age classes, younger children benefit from the older children. Children in Montessori classrooms

more effectively develop their social skills and self-exploration. They learn how to interact with others when they work and learn together in an educational environment tailored to the specific characteristics of children at different ages (Torrance & Chattin-McNichols, 2009). The parents thus believed Montessori curriculum was beneficial for their children's education.

There have not been many studies on Montessori programs conducted in Taiwan, though some studies have revealed that kindergarten children in Montessori had better social skills than non-Montessori children (Chen, 1991; Cheng, 1993; Huang, 1993; Wu, 1994). These researchers further reported that mixed-age classrooms in Montessori program appeared to be a predictor of positive social skills development. For example Huang (1993) compared the interpersonal skills of kindergarten children from non-Montessori and Montessori programs and found that children in Montessori programs display more often interpersonal skills such as good manners and offering help to their peers during clean-up time. These findings confirmed Lilliard's (2005) findings in the U.S. that children in Montessori programs had the ability to interact well with their peers.

In terms of academic achievement, findings have been mixed. Shen (2005) compared two groups of 26 first graders in Taiwan on mathematics abilities. One group had attended Montessori kindergartens and the other attended non-Montessori kindergartens. The students were given 44 mathematics questions related to concepts of numerals, calculation, and application. Students who did not have Montessori kindergarten experience had better scores on the concept of numerals, calculation, and application than the students who were in Montessori kindergarten. However, Shen (2005) also found that kindergarten children from non-Montessori program had better abilities in math concepts of numerals, calculation, and application than children in Montessori programs.

Chen (2005) looked at how Montessori-educated children develop specific mathematical relations and meanings by both actively dealing with the material and receiving (tactical) support and instruction from the teacher. She found out that the children had great interest in both the mathematical didactics and constructive development of mathematics taught using the Montessori method. Hsu (1995) revealed that five-year-old children in Montessori programs could read and write four digit numerals and subtraction facts.

In earlier research on U.S. students who attended Montessori schools made better progress on academic and social skills compared to those in other programs (Chattin-McNichols 2009; Davis, 2006; Duax, 1999; Epstein, 1990; Manner, 1999). In addition, teachers stay with the same group of children for three years, they better understand their students' progress and development. Moreover, in Montessori classrooms, the emphasis is on child-centered learning in which the students are active and have more freedom to choose their learning tasks compared to the traditional classrooms.

Lopata et al. (2005) compared children from Montessori and traditional programs between fourth and eighth graders and found no difference in academic achievement in language arts and mathematics between the programs. However, Dohrmann et al. (2007) and Dohrmann (2003) reported that students in the same grade levels in Montessori programs scored higher in math and science but no difference in English and social studies' scores. Studies reported students in elementary grades in Montessori program had better scores on writing and math and that they were able to write more inventive sentences with more complex structure (Castellanos, 2002; Lilliard & Else-Quest, 2006; Soundy, 2003). Lilliard (2005) indicated that Montessori programs can help children engage in good collaborative learning, develop interactive skills with peers and teachers, and enhance their thinking and learning. With these conclusive results from

previous studies, we plan on further expanding the study to include Taiwanese children and the positive impact Montessori education on increasing test scores in language arts, math, and social studies.

### **The Study**

In this study we examine whether elementary school children in Taiwan who had received Montessori early childhood education obtained significantly higher scores on tests of language arts, math, and social studies than children who attended non-Montessori pre-elementary education programs. Two research questions guided the study:

1. Do elementary school children (grade one to three) who attended at least one year of Montessori early childhood education programs in Taiwan obtain higher scores on tests in the subjects of language arts, math, and social studies than students who attended non-Montessori early childhood education programs?
2. Is there a significant difference between the number of years spent in Montessori programs and students' language arts, math, and social studies test scores in first, second, and third grade?

### **Participants**

The participants were 196 first, second, and third grade students enrolled in a private Catholic elementary school in Taipei, Taiwan in the 2008-2009 academic year. Of these, 35 first graders received at least one year of Montessori education, 35 second graders received at least two years of Montessori education, and 28 third graders who received at least three years of Montessori education. Another 35 first graders, 35 second graders, and 28 third graders attended non-Montessori early childhood education programs. All the participants were randomly selected based on the Student Background Information Questionnaire. Children of parents with



less than a high school education or who were enrolled in cram schools (after-school programs) were eliminated from the study.

### **Measures and Procedure**

Data was collected from three standardized tests and one demographic questionnaire. We introduce each of these tests and the questionnaire in more detail below.

**Elementary School Language Ability Achievement Test (ESLAAT).** The ESLAAT was designed to measure language arts ability and was administered to children in first, second, and third grade. It was developed by Chou and Yeh (2007) using the standards of the Nine-Year Integrated Curriculum set by the Ministry of Education in Taiwan. It has five sections with 40 questions each for first and second graders, and 50 questions for third graders. These tests assessed *pin-yin* (the ability to recognize Chinese characters with the aid of the phonetic symbols of alphabet letters to pronounce the words), vocabulary, and reading comprehension. The reading comprehension test requires the students to read three to four short essays and answer questions about them. The ESLAAT's split-half reliability and consistency has score of .69 and Cronbach's alpha of .84 for first grade. For the second grade, the test has split-half reliability of .79 and Cronbach's alpha of .90, and for third grade, the test has split-half reliability of .88 and Cronbach's alpha of .91.

**Elementary School Math Ability Achievement Test (ESMAAT).** The ESMAAT measures math ability for first, second, and third graders (Chou, 2007). The test has 30 questions and divided into five subscales: numbers, algebra, geometry, graphs, and solving problems. The test has split-half reliability of .71 and Cronbach's alpha of .83 for first grade, split-half reliability of .75 and Cronbach's alpha of .74 for second grade, and split-half reliability of .80 and Cronbach's alpha of .84 for third grade. The test asked about understanding of place value,

the base-ten number system, and fractions. It also asked students to recognize, describe, and extend patterns such as sequences of sounds and shapes or simple numeric patterns and translate from one representation to another. Lastly, it asked students to describe geometric numeric patterns, describe attributes and parts of two- and three-dimensional shapes, and investigate and predict the results of putting together and taking apart two- and three-dimensional shapes.

**Social Studies Ability Achievement Test (SSAAT).** The SSAAT was used to measure children's social studies competency. The test was piloted and the SSAAT for first grade's Cronbach's alpha was found to be .74, for second grade's Cronbach's alpha was .80, and the third grade Cronbach's alpha was .83. The test questions asked about the family practices, traditions and community, the different events and holidays in the community, the name of countries and capital cities in around the world, the relationships between people, places, environments, and the role of civic ideals and practices in Taiwan schools.

**Student Background Information Questionnaire.** The questionnaire consists of nine questions. The question asked about each participant's school, class, gender, date of birth, identification number, parents' highest education, and the length of study in early childhood education programs. It also asked participant the name of early childhood education programs, and whether or not a child attended a cram school to enhance academic performance.

### **Data Collection and Analysis**

All participants took the ESMAAT, ESLAAT, and SSAAT as well as the demographic questionnaire in early fall. The students took the achievement tests again at the end of fall semester. The classroom teacher administered all of the instruments. One-way multivariate analysis of variance (MANOVA) with Post Hoc *F* was used to analyze the results and effect sizes. If the MANOVA result was significant, it was followed by a univariate analysis of

variance (ANOVA). MANOVA is a statistical test procedure for comparing multivariate (population) means of several groups and it is utilized when there are two or more dependent variables used in the study. The present study uses multiple dependent variable (test scores from ESLAAT, ESMAAT, and SSAT) and three grade levels (grades one, two, and three) and two independent variables (Montessori and non-Montessori programs), to find out if the dependent variables have significant effects on the independent variables.

To find out if first, second, and third grade students who have attended Montessori schools scored higher than non-Montessori school students in language arts, math, and social studies, data from ESLAAT, ESMAAT and SSAAT were analyzed using one-way MANOVA. To answer the second research question about whether the number of years of attending Montessori school has a significant difference to the children learning outcome as measured by their achievement test scores in language arts, math, and social studies, one-way MANOVA was utilized. For the purpose of this study, parental education background was controlled.

### **Results**

The one-way MANOVA showed that students who had attended Montessori schools had a higher score in language arts in all three grade levels. In math, first grades scored higher but second and third grade students did not. However, in social studies, the students in Montessori education in all three grade levels did not score significantly higher than the non-Montessori students. There was also no significant difference between the number of years the first, second, and third grade students had Montessori early childhood education and their scores on the language arts, math, and social studies except in third grade. In third grade, students who had one or more years in Montessori education had higher scores in language arts than non-Montessori students. Therefore, the third grade students, whom received Montessori education

for three years did not show an overall better score than non-Montessori educated students.

Overall results revealed that there was no significant difference between numbers of years children had in Montessori education. We examined the results by grade levels. We investigate if the number of years attending Montessori school had significant effects on test scores.

### **First Grade Student Test Scores and Number of Years in Montessori Education**

The ESLAAT and ESMAAT scores showed that first grade students who had Montessori early childhood education experiences had higher scores on tests of language arts and math than the non-Montessori students. Mean and standard deviation of test scores of first grades students are presented in Table 1.

The results of the MANOVA show a significant difference between the two groups in the composite scores of language arts and math. The Wilk's lambda multivariate  $F$  was used for interpreting MANOVA results, the Wilks's  $\Lambda$  .84 was significant,  $F(5, 64) = 2.44 p < .01$ . Since the difference was significant, univariate  $F$  for the separate variables was calculated; there were no differences in the SSAAT scores,  $F(1, 68), p > .05$ . The scores on the ESLAAT and ESMAAT were statistically different between the two groups,  $F(1, 68) = 10.96, p < .05$  for language arts and,  $F(1, 68) = 4.46, p < .05$  for math. The effect size for language arts was .75 and .50 for math scores.

Table 1

*Mean, Standard Deviation, Effect Size, and Significance Level of the Language Arts, Math and Social Studies' Scores in First, Second, and Third Grade Students in Montessori and Non-Montessori Programs*

Grade	Program	Language Arts Mean (SD)	Math Mean (SD)	Social Studies Mean (SD)
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1	M	24.03 (9.71)	20.00 (7.39)	23.00 (7.16)
	NM	16.71 (8.75)	16.49 (7.33)	20.29 (8.39)
	Effect Size Significance Level	0.75 0.00	0.50 0.04	0.32 0.15
2	M	32.83 (5.78)	21.46 (4.74)	31.00 (3.99)
	NM	28.71 (5.60)	19.57 (5.29)	29.89 (2.61)
	Effect Size Significance Level	0.71 0.00	0.36 0.12	0.28 0.17
3	M	39.57 (5.09)	24.64 (5.52)	35.86 (4.09)
	NM	33.46 (10.90)	22.5 (8.09)	43.04 (6.08)
	Effect Size Significance Level	0.56 0.01	0.26 0.03	0.30 0.00

*Note:* M = Montessori; NM = Non-Montessori; *SD* = Standard Deviation

Table 2 illustrates the mean and standard deviation in language arts, math, and social studies according to years and grade level in Montessori education. First grade students who had one year of Montessori education showed no significant difference in math scores among the group with one year Montessori experience, the group with two years Montessori experience, and the group with three years Montessori experience. There was also no significant difference in language arts scores demonstrated among the group with one year Montessori experience the

group with two years Montessori experience and the group with three years Montessori experience. On social studies scores, there was also no significant difference demonstrated among the group with one year Montessori experience the group with two years Montessori experience and the group with three years Montessori experience. In another words, there were no significant differences between scores on the ESLAAT, ESMAAT, and SSAAT of first grade students with one, two, or three years of Montessori education.

Table 2

*Mean and Standard Deviation in Language Arts, Math, and Social Studies According to Years in Montessori and Grade Level*

Years in Montessori	Grade Level	Language Arts		Math		Social Studies	
		Mean (SD)	Outcome	Mean (SD)	Outcome	Mean (SD)	Outcome
1	1	21.82 (7.52)	ND	18.00 (11.33)	ND	21.09 (8.04)	ND
	2	32.50 (3.94)	ND	21.58 (4.34)	ND	30.17 (2.95)	ND
	3	37.57 (5.35)	ND	25.14 (4.09)	ND	35.21 (5.39)	ND
2	1	26.46 (7.62)	ND	21.46 (5.30)	ND	24.62 (4.15)	ND
	2	34.17 (2.98)	ND	22.58 (3.36)	ND	36.50 (2.18)	ND
	3	41.57 (4.09)	ND	24.14 (6.79)	ND	32.33 (4.89)	ND

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3	1	23.36 ND (10.44)	20.91 ND (7.39)	23.00 ND (9.02)
	2	31.72 ND (9.11)	20.09 ND (6.14)	30.00 ND (5.88)
	3	39.57 ND (4.09)	24.64 ND (5.53)	35.86 ND (4.09)

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*Note:* ND =No Difference; *SD*= Standard Deviation

### **Second Grade Student Test Scores and Number of Years in Montessori Education**

Comparison of the second grade students' achievement test scores between those who attended Montessori preschool and kindergarten and those who attended non-Montessori preschool and kindergarten was accomplished using a one-way MANOVA. The overall MANOVA result shows that there was significant difference between two groups in language arts,  $F(1, 68) = 9.16, p = .00$ , but the scores on math and social studies tests were not significantly different between the two groups. Table 1 presents the mean and standard deviation of language arts, math, and social studies scores. The second graders who had Montessori preschool and kindergarten experience had slightly higher mean scores than second graders who did not have Montessori preschool and kindergarten experience, Wilks' Lambda = .88,  $F(3, 66) = 2.97, p = .03$ .

To determine whether there was an effect of the number of years in Montessori education and students' academic achievement, scores of the ESLAAT, ESMAAT, and SSAAT were analyzed using a one-way MANOVA. The results showed that the number years of Montessori learning did not show significant differences on the second grade students' test scores on language arts, math, and social studies. The number of Montessori learning years does not seem

to have a strong impact on the academic achievement. As shown in Table 2, there was no significant difference demonstrated among the groups with one, two, or three years of Montessori experience, and the group with three years of Montessori experience in language arts, math, or social studies. Overall, there were no differences among the three groups, Wilks' Lambda = .88,  $F(6, 60) = .68$ ,  $p = .67$ .

### **Third Grade Student Test Scores and Number of Years in Montessori Education**

However, in third grade, there was a significant difference in language arts scores but not in the math and social studies between the students who had Montessori experience and students who did not,  $F(1, 26) = 4.95$ ,  $p = .04$ . Table 1 illustrates the mean and standard deviation for language arts, math, and social studies. The overall MANOVA result showed that there was no significant difference between the two groups on the composite scores of the tests (math and social studies), Wilks' Lambda = .88,  $F(3, 52) = 2.92$ ,  $p = .08$ .

For the number of years and students' scores in language arts, math, and social studies, the mean and standard deviation showed that there were no significant differences between scores on the ESLAAT, ESMAAT, and SSAAT of first grade students with one, two, or three years of Montessori education for third grade Montessori students. Table 2 shows details of mean and standard deviation each of the subject area and student years in Montessori education. Overall, there was no significant difference among three groups, Wilks' Lambda = .84,  $F(3, 24) = 1.56$ ,  $p = .23$ .

### **Discussion**

We found statistically significant differences between elementary school children in first grade with Montessori experience and those with non-Montessori experience in language arts on the ESLAAT and in math scores on the ESMAAT. Specifically, students with Montessori



experience obtained higher scores than those who did not have such experience. However, no significant differences were found in social studies scores on the SSAAT.

In the second and third grade, there were significant differences in favor of Montessori students in language arts scores on the ESLAAT but not in math scores on the ESMAAT and social studies scores on the SSAAT. Therefore, our results were mixed with Montessori students doing better in some areas but not in others. It should be noted that the Montessori children had consistently higher scores in all the tests of academic achievement than the non-Montessori children even though not all of the scores attained statistical significance. This is in general agreement with research findings that show children from Montessori education program are doing better in some respects than children from other programs (Chattin-McNichols, 2009; Roopnarine & Johnson, 2010). In the U.S., Montessori students have stronger academic outcomes than non-Montessori students, especially in language arts (Daux, 1999; Daux, 2005; Lillard & Else-Quest, 2006; Manner, 1999). The present findings partially support the findings of other studies and show that Montessori education has some long-term impact on the students' language arts learning.

Considering math alone, only first grade students with Montessori experience showed an advantage in math scores over those who did not attend Montessori programs. This finding is also supports Lillard and Else-Quest (2006) who found similar results for U.S. primary students (three to six years old) at the end of kindergarten. Other study shows that Montessori attendees in Taiwan were better in formal mathematics skills such as reading numbers and writing numerals and performing subtraction facts than non-Montessori attendees (Hsu, 2005).

With reference to the second research question which addressed the impact of the length of Montessori education, one-way MANOVA showed that there was no significant difference in

academic achievement for first and second grade students. However, third grade students who spent more years in Montessori schools obtained significantly higher scores in language arts. All the children in this study who participated in Montessori programs showed higher scores in language arts and math, but perhaps the single positive result obtained in the third grade suggests that the students who had more years of Montessori education experienced the higher scores in language arts.

In the U.S., many Montessori schools claimed that Montessori education results in higher academic achievement among the students (Dohrmann, 2003; Yussen, et al., 2008). Dohrmann, et al. (2007) reported similar results in learning outcomes for students who attended Montessori program. They found that students who had Montessori experience from preschool to fifth grade had higher math and science scores than non-Montessori students, but there were no differences between these two groups in English and social studies test scores. Other researchers reported that primary-level Montessori students had better test scores on standardized mathematics and reading tests (Chattin-McNicols, 2009; Lopata et.al, 2005; Manner, 1999).

In Taiwan, there are many Montessori preschool and kindergarten programs but very few in elementary schools or middle schools (Cheng, 2008; Chinese Montessori Foundation for Early Childhood Education Research, 2008). This is because of the difference in the education systems between Taiwan and U.S. in which the Taiwanese students do not have an opportunity to continue their Montessori education beyond kindergarten into elementary and middle schools (Wei, 2007; Yeh, 2007). In contrast, most researchers in U.S. conducted research studies in Montessori education in elementary schools and Montessori middle schools whose students have had Montessori education since kindergarten (American Montessori Society, 2008). Even though the present study yielded mixed results about students' learning outcomes, it still

supported the position that Montessori education has some positive influence on achievement in elementary grades.

Montessori education has existed for more than 100 years, but was introduced in Taiwan only 24 years ago (Ho, 2006; Ministry of Education, 1987; Tu, 2007). Montessori education is still one of the major teaching pedagogies used in preschool and kindergarten in Taiwan (Wu, 2004). However, little research had been conducted on Montessori education in Taiwan and most of that has focused only on children at preschool and kindergarten levels rather than elementary school levels. Although the present study showed mixed results which did not entirely support the hypothesis that students who attend Montessori preschool and kindergarten program demonstrate consistently superior academic learning outcomes, there was weak support for the hypothesis that Montessori preschool program have certain advantages. In fact, in the present study, three grade levels of students who had Montessori early childhood experience demonstrated better learning outcomes in language arts and the first grade students who had Montessori learning experiences also had better math scores. These findings provide initial evidence that Montessori education is a beneficial and effective pedagogy in early childhood education and may not have any noticeable adverse limitations.

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