

# **An Evaluation of Montessori Education in South Carolina's Public Schools**

## **Executive Summary**

AN EVALUATION CONDUCTED BY  
THE RILEY INSTITUTE® AT FURMAN  
WITH SUPPORT FROM:

**Self Family Foundation**  
**S.C. Education Oversight Committee**





## Executive Summary

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With support from the Self Family Foundation and the South Carolina Education Oversight Committee, the Riley Institute has completed a multi-year study of Montessori education in South Carolina's public schools, the most comprehensive evaluation of public Montessori ever conducted in the United States. Between 2011 and 2016, this mixed-method study examined how Montessori impacts stakeholders in South Carolina and provided information needed to guide future investment in Montessori education. Researchers investigated the following as parts of the study: the extent to which schools implemented Montessori with fidelity; the demographic makeup of public school Montessori students; the effect of Montessori education on academic and behavioral outcomes; the impact of Montessori education on creativity, social skills, work habits, and executive function; and Montessori teachers' perspectives on job satisfaction and the challenges of Montessori in the public sector. The study results demonstrate that students in public school Montessori classrooms across the state are faring well, as compared to similar non-Montessori public school students, when examining academic, behavioral, and affective outcomes.

## Study Components

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### Implementation Study

Information about the extent to which public schools were adhering to the Montessori model was assessed in a two-part fidelity study.

**Principal Survey.** Montessori principals completed a survey each year about their school's Montessori program

**Classroom Observations.** Over four years, 126 classrooms across the state were randomly selected for an unannounced observation.

### Impact Study

Data about academic and behavioral outcomes were explored yearly as part of the impact study, along with affective outcomes such as creativity, social skills, work habits, and executive function.

**Analyzing Student Demographics.** Using existing student record databases maintained by the South Carolina Department of Education (SCDE), researchers compared demographic characteristics of Montessori students and non-Montessori public school students.

**Analyzing Student Academic and Behavioral Outcomes.** Researchers used existing student record databases maintained by the SCDE to examine standardized test performance, discipline, and attendance. The research team compared outcomes of Montessori students to demographically similar students who did not attend a Montessori school.

**Examining the Impact of Montessori on Affective Outcomes.** Researchers examined differences in how a cohort of Montessori students and non-Montessori students performed on assessments measuring creativity, work habits, social skills, and executive function.

**Gaining a Deeper Understanding of Montessori Programs: Surveying Montessori Teachers.** Researchers examined how Montessori programs affected students, teachers, and schools from the perspectives of teachers.

## Overview of Key Research Findings: Preliminary Results

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### Fidelity to the Model

On average, public school programs in South Carolina are implementing the Montessori model with fidelity, although there is variation regarding the extent to which different programs implement authentic Montessori. Of the programs that were observed, 22 were classified as high fidelity, 14 as mid fidelity, and 8 as low fidelity.



### Student Demographics

When the study ended in the 2015-16 academic year, there were 7,402 students participating in a public Montessori program in 45 different schools across 24 districts in South Carolina.<sup>1</sup> Most Montessori programs are in Title I schools, and the majority of students are low-income. Approximately 55% of Montessori students are white, while 34% are black and 10% are Hispanic. One in ten Montessori students has a special education designation. While Montessori students are generally quite similar demographically to other public school students across the state, Montessori students are more likely to be white and higher income when compared to non-Montessori students in the same district.



### Academic Outcomes

**Proficiency.** For the most recent year of data collection (2015-16), 52% of Montessori students met or exceeded state standards in ELA, 46% met or exceeded state standards in math, 70% met or exceeded state standards in science, and 80% met or exceeded state standards in social studies. When compared to non-Montessori public school students across the state, Montessori students were more likely to have met or exceeded the state standards in each of the four subjects.

**Achievement Growth Analyses.** After matching Montessori students to demographically similar non-Montessori students and controlling for student demographics and previous test scores, researchers found that Montessori students scored significantly higher on ELA state standardized tests than non-Montessori students across all three years of the analysis. Furthermore, there was a significant Montessori advantage in math and social studies in two of the three years. The results for science were mixed, as Montessori students demonstrated significantly less growth than non-Montessori students in one year (2013-14) and significantly more growth in another year (2015-16). Subgroup analyses indicated that low-income Montessori students scored significantly higher than low-income non-Montessori students in ELA, math, and social studies. While these differences in achievement growth between Montessori and non-Montessori students are statistically significant, the differences are generally quite small, as the effect sizes typically range from .05 to .08 standard deviations.



### Affective Outcomes

Direct assessments of a cohort of students over four years show that Montessori students generally perform similar to or better than non-Montessori students on assessments of executive function, although the results are mixed over the years. Montessori students exhibited significantly higher levels of creativity than non-Montessori students. There were no consistent differences between the two groups on work habits or social skills.

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<sup>1</sup> According to the South Carolina Department of Education, in 2018, there are 385 Montessori teachers in 52 school sites serving over 8,500 students in Montessori classrooms.



## Behavioral Outcomes

Montessori students consistently demonstrated higher school attendance than matched non-Montessori students after adjusting for the attendance rate in the previous year and student characteristics. Furthermore, Montessori students were significantly less likely than similar non-Montessori students to have had a disciplinary incident or have served a suspension during the school year.



## Teacher Perceptions

A majority of Montessori teachers reported that they loved their jobs and planned to remain in the profession. Few showed interest in administration. Teachers expressed concerns about the authenticity of their school's program, school and district administrators' lack of understanding of Montessori, the pressure of a standards-based curriculum, and the amount of time spent testing.

## Conclusion and Discussion

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Since the establishment of the state's first public Montessori program at Walker Gamble School in the Clarendon 3 school district in the mid-1990s, South Carolina has been on the cutting edge of public Montessori. Yet, despite the growth and popularity of Montessori education in the state and across the country, there has been a dearth of research on the fidelity of Montessori programs in the public sector and the effect of Montessori on student outcomes. To analyze these important questions, the Riley Institute developed and implemented the most comprehensive evaluation of public Montessori to date. This evaluation provides insight on the impact of public Montessori on diverse stakeholders.

Through the efforts of state, district, and school officials, South Carolina is a leader in public Montessori, and this study demonstrates that public Montessori continues to grow throughout the state in terms of the number of Montessori programs and student enrollment. While the teacher survey results indicate that there is some tension between the Montessori model and the standards and accountability movement, classroom observation and principal surveys indicate that most public Montessori programs are implementing the Montessori model with fidelity.

For the impact study, researchers matched Montessori students to non-Montessori students with the same demographics and similar baseline academic performance. These matched analyses provided evidence that Montessori students experienced greater achievement growth in ELA, math, and social studies. Further, the benefits of Montessori extend beyond standardized test scores, as Montessori students also demonstrated better school attendance and behavior. The results for affective outcomes were mixed, but Montessori students had higher levels creativity and executive function in some years of the evaluation.

Some possible reasons for the positive Montessori effects seen in this study stem directly from the core elements of the Montessori philosophy and method, which have remained relatively unchanged for over 100 years. Many of these core practices have been researched independently and found to be solid strategies for yielding positive outcomes for students. In the Montessori model, however, they are bundled into one instructional package, complementing each other and guided by the Montessori philosophy of how children develop and learn.

Like any evaluation of this kind, this study is not without its limitations. In terms of fidelity to the model, principal survey scores were sometimes inconsistent with the classroom observation scores. For the impact analyses, the major challenge was selection bias. The research team employed exact matching for the achievement, attendance, and behavior outcome analyses to create apples-to-apples comparisons, and a “no choice” Montessori program at entry for three and four year-olds was selected for the cohort analyses. Despite the best efforts of the research team, selection bias could still exist. Finally, the research team faced a host of challenges regarding measurement of outcomes. The state-mandated standardized testing regime changed three times over the course of this study. Additionally, while there is general agreement that affective outcomes are critically important, there is still debate regarding the best way to measure them. In this evaluation, researchers used a variety of measures to assess affective outcomes, none of which were perfect.

This evaluation provided considerable evidence of a Montessori advantage. However, the research team was particularly interested in the effect of Montessori on education inequalities. Montessori education is often thought of as an elite approach to education for privileged students, primarily available in the private sector. However, because of the promise the model has offered to students across the world for over 100 years, considerable investment was made in South Carolina to implement Montessori in public schools across the state. These schools, most of them classified as Title I, serve large numbers of low-income and minority students in often rural and poverty-stricken areas. The question of how these students perform and whether or not investment in Montessori has paid off for these students looms large.

This study attempted to answer these and other questions around the ability of Montessori education in the public sector to moderate the effects of poverty on students. This study found that public Montessori is not limited to high-income, primarily white students. In fact, low-income students and non-white students make up 54% and 45%, respectively, of all Montessori students in public Montessori programs in South Carolina. However, within district analyses demonstrated that white and higher income students may be overrepresented in public Montessori programs. Nonetheless, it remained an open question whether the Montessori advantages in test score growth found in the general analyses were wide-ranging. The sub-group analyses presented in this evaluation provide evidence of the egalitarian possibilities of Montessori education. Low-income students and low-achieving students seem to benefit from Montessori. While white Montessori students exhibit higher growth than similar students in the matched comparison group, so do black Montessori students. This evaluation by the Riley Institute provides evidence that public Montessori has appeal to a broad range of parents in South Carolina, and it appears that the benefits of Montessori education are wide-ranging as well.

## **Full Report**

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The full report is available at [furman.edu/Montessori](http://furman.edu/Montessori)

## Study Authors and Contributors

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**Dr. Brooke Culclasure** (Ph.D. University of Virginia) served



as the study's principal investigator and oversaw all aspects of the study. Dr. Culclasure is the Research Director of the Riley Institute's Center for Education Policy and Leadership, housed at Furman University.

**Dr. David J. Fleming** (Ph.D. University of Wisconsin) served



as the study's senior statistician and co-investigator. Dr. Fleming is an Associate Professor in the Politics and International Affairs Department at Furman University and a Senior Researcher with the Riley Institute.

**Dr. Ginny Riga** (Ed.D. University of South Carolina) served as



the Montessori expert consultant for the study and assisted with the measurement of model fidelity. Dr. Riga currently works in the South Carolina State Department of Education as the Montessori Consultant in the Office of Personalized Learning .

**Alexis Sprogis** assisted with data collection, project



logistics, and reporting. She is a Research Specialist in the Riley Institute's Center for Education Policy and Leadership, housed at Furman University.

**Dr. Lorraine DeJong, Kelly Gregory, and Rashmi Janakiraman** served as data collectors in schools. Montessori classroom observers included **Catherine Stevenson Beemer, Gail Hornsby, Stacy Hudson, Elaine Kalagher, Jo-Anne Long, Russell Long, Teresa Noble, and Diana Zellner.**

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This evaluation was carried out in accordance with the recommendations in the guidelines for human research of the Institutional Review Board at Furman University, which approved the study protocol. Parents or guardians provided written consent for all participation of minors.



## **Leadership, Knowledge, Impact.**

The Riley Institute at Furman broadens student and community perspective about issues critical to South Carolina's progress. It builds and engages present and future leaders, creates and shares data-supported information about the state's core challenges, and links the leadership body to those solutions to drive sustainable solutions.

Launched in 1999, the Institute is named for former South Carolina governor and former United States Secretary of Education Richard W. (Dick) Riley. It is committed to nonpartisanship in all it does and to a rhetoric-free, facts-based approach to change.

The Riley Institute's research group promotes evidence informed education practices and supports organizations that serve children and families across South Carolina. Part of the Institute's Center for Education Policy and Leadership, the group conducts in-depth research and evaluation studies to support organizational decision-making and practice. It also builds internal evaluation capacity among organizations serving children and families so that outcomes are maximized for citizens across the state.

For more information, please visit [riley.furman.edu](http://riley.furman.edu)

