

Authors: Amanda Williford, Kate Matthew,
Virginia Vitiello, Lilian Hummer,
Kelsey Clayback, Caitlin Powell,
and Marissa Bivona

Executive Summary

Children’s development from birth to age five sets the stage for their later social, emotional, physical, and cognitive potential. High-quality early childhood care and education experiences, including experiences within programs serving infants, toddlers, and/or preschoolers in private, faith-based, public, and family day home settings, nurture children through fostering relationships and helping children develop the skills they need to thrive.

Providing early childhood education (ECE²) leaders and teachers with a comprehensive and high-quality curriculum package — one that can be used seamlessly across infant, toddler, and preschool classrooms and embeds aligned professional development (PD) and coaching for all program staff to support implementation — holds significant potential to improve the early learning experiences of our youngest citizens.



In this report, we present information about a newly developed, comprehensive, and integrated curriculum, [STREAMin³](#), and findings from a pilot evaluation of this curriculum. STREAMin³ was designed for educators’ use in group-based settings serving children from birth to age five.

Two research questions guided this pilot evaluation:

1. How well was STREAMin³ implemented? To answer this question, we tracked the exposure of teachers and children to multiple aspects of STREAMin³, the quality of curriculum implementation, and participants’ responsiveness to the curriculum.

2. Was STREAMin³ implementation associated with improvements in teaching practices? We used teacher surveys at the start and end of each implementation phase to determine whether and how STREAMin³ was associated with changes in perceived teaching practices and teacher-child interactions.

Highlights of the Streamin³ Curriculum



Daily activities, routines, and games that maximize the moment-to-moment teacher-child and peer interactions



Individualized coaching and professional development aligned to the curriculum



Observation tools & assessments to inform teaching and increase implementation quality

² Early childhood education (ECE), early childhood care and education (ECCE), and early childhood education and care (ECEC) are terms that are often used synonymously. In this report, we define early childhood education (ECE) inclusive of early childhood programs that provide care and education to young children from birth through preschool in private, faith-based, public, and family day home settings.

The STREAMin³ Curriculum Model

STREAMin³ fosters integrated, intentional interactions (in³) between teachers and children to promote children’s development of five Core Skills (Relate, Regulate, Think, Communicate, and Move) and six STREAM Skills (Science, Technology, Reading, Engineering, Art, and Math). The curriculum includes daily activities and book readings, guidance for classroom setup, routines, games that support social and cognitive skills, and quick activities that can be used during transitions or other parts of the day.

A key innovation of STREAMin³ is that it includes an aligned and fully embedded coaching and professional development system for teachers and programs leaders. Coaches partner with teachers to help them understand the Core Skills and STREAM skills and to use research-based Intentional Teaching Practices (ITPs) aligned to each skill in their interactions with children. The coaches conduct regular observation and feedback sessions with teachers and support teachers in the use of formative and progress monitoring assessments. On a regular basis, program leaders meet with coaches and attend professional development sessions. Over time, leaders gain the skills they need to become implementation support specialists: they themselves conduct observations, provide teachers with feedback, lead professional development sessions, and provide in-the-moment scaffolds to teachers related to STREAMin³.

It is a great hands-on and fun curriculum that really focuses on what children need to be ready for kindergarten. The teachers find it easy to follow, and the model gives them loads of support in implementing it.

- School Administrator

6 STREAM Skills



SCIENCE



TECHNOLOGY



READING



ENGINEERING



ART



MATH

5 Core Skills



RELATE - with peers and adults



REGULATE - their emotions, attention, and behavior



THINK - deeply about the world around them



COMMUNICATE - with others productively



MOVE - their bodies to achieve goals

The STREAMin³ Implementation Pilot

We implemented the STREAMin³ curriculum in 121 public, private, and faith-based early childhood classrooms from the winter of 2018-2019 through spring 2021 across two phases (Phase 1, December 2018 through June 2020, Phase 2, July 2020 through June 2021). The participants included teachers and classrooms serving infants (8 classrooms), toddlers (25 classrooms), and preschoolers (88 classrooms).

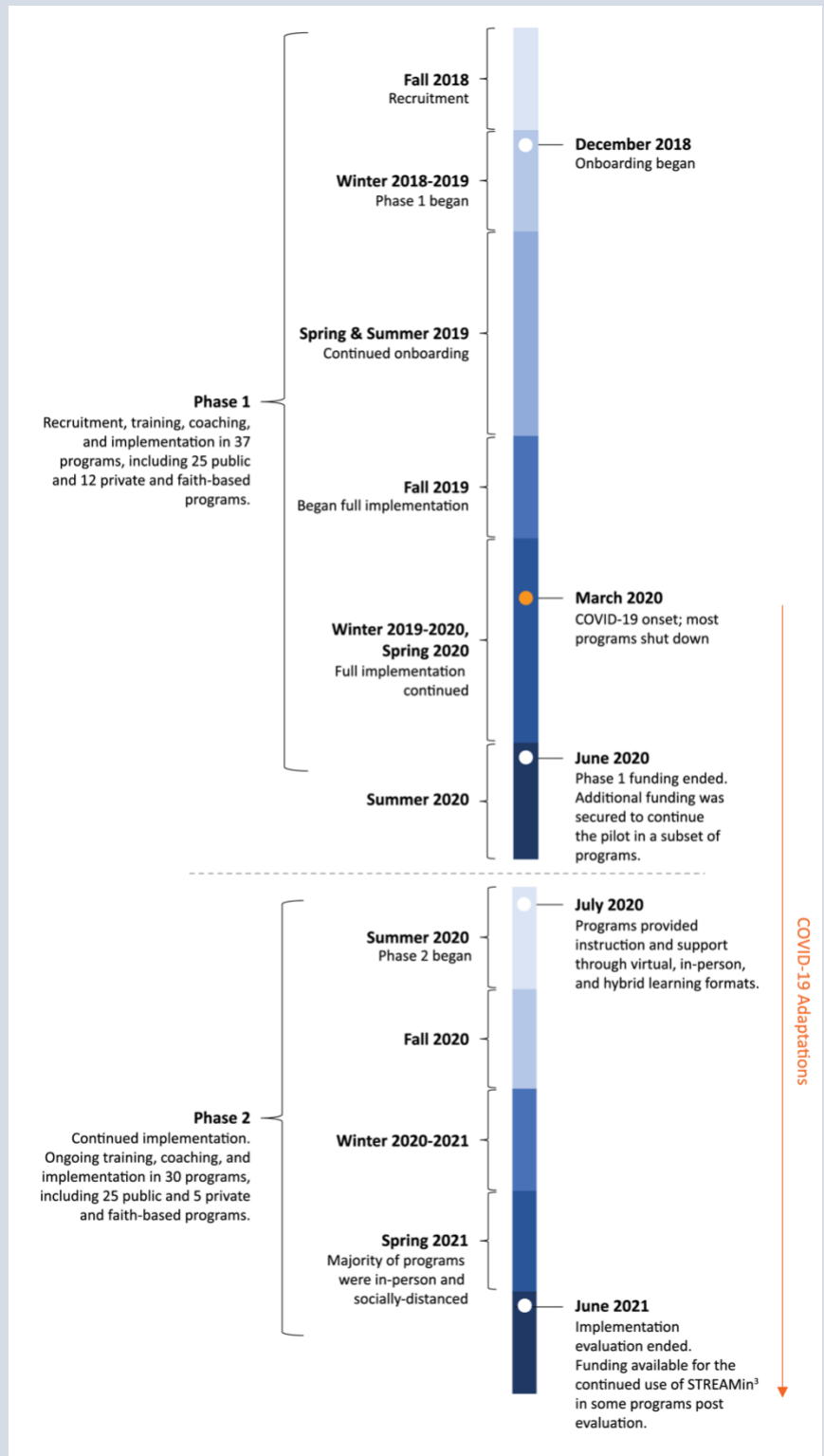
Some programs participated through spring 2020, when funding from the Virginia Department of Social Services concluded. Others continued through spring 2021 with ongoing funding or instrumental support from Elevate Early Education (E3), the Obici Healthcare Foundation, the Alleghany Foundation, and ReadyKids Charlottesville.

COVID-19 Adjustments. The onset of COVID-19 caused significant disruptions to children’s learning and required us to adjust the implementation of the curriculum and the collection of evaluation data. All programs experienced temporary, or in some cases, permanent closures. Public classrooms shifted to remote instruction in the spring of 2020 and returned to varying levels of in-person and virtual instruction over the 2020-21 school year. Most private programs provided in-person instruction throughout the pandemic with some temporary closures. Coaches and teachers worked together to adapt the curriculum to these changing circumstances.

Key adaptations included:

- Reworking STREAMin³ activities for remote instruction
- Conducting observations, coaching, and PD sessions virtually
- Developing curriculum-based, family guides with home learning activities
- Shifting coaching and professional development activities to focus on children’s social-emotional well-being

Implementation Pilot Evaluation Phases



Teachers and program leaders continued to complete survey data, but some planned data, including observations of teacher-child interactions and assessments of preschool children's school readiness skills, were not collected.

High Rates of Teacher and Leader Turnover

We had strong engagement at the program level, with neither program leaders nor teachers formally withdrawing from the evaluation during the pilot. However, teacher and leader turnover was high before and after the onset of the pandemic. In the first phase of implementation, 63% of classrooms experienced turnover in staff members, including teachers and/or assistant teachers. After the onset of the pandemic, 83% experienced turnover. To understand and evaluate implementation over time, we limited most analyses to the 86 teachers who participated throughout the first phase (December 2018 through June 2020) and the 58 teachers who participated throughout the second phase (July 2020 through June 2021).

Sources of Information

The data used for this evaluation pilot were collected by various informants and through a variety of methods. Throughout the pilot, teachers and leaders completed surveys about curriculum implementation, their engagement in coaching and PD, perceptions of how instruction changed over time, and satisfaction with the curriculum. Coaches recorded each contact they had with a leader or teacher and conducted frequent classroom observations. We planned to collect spring 2020 and fall 2020 observations of teacher-child interactions and assessments of children's school readiness skills from preschool children. However, we were unable to fully complete these aspects of data collection due to the pandemic.

Key Findings

Teachers and coaches used the CLASS® observation tool to understand the quality of teacher-child interactions and the Virginia Kindergarten Readiness Program (VKRP) to understand preschool children's school readiness skills.

- COVID-19 disruptions prevented coaches and teachers from conducting CLASS® observation and VKRP assessments in the spring of 2020; students were not assessed in person in the fall of 2020 but a subset of teachers administered a remote version of the VKRP at that time.
- The observed quality of teacher-child interactions increased from baseline (spring 2019) to the beginning of full implementation (fall 2019). CLASS data remained consistent from fall 2019 through spring 2021 scores, despite the disruptions associated with the pandemic. CLASS® data from the fall of 2019 and the spring of 2021 showed that the quality of teacher-child interactions was above the recommended threshold indicators for high quality (5 for Emotional Support and Classroom Organization; 3.25 for Instructional Support). This evaluation was not designed to test the impact of STREAMin³ on CLASS®. However, these data illustrate the effort teachers put forth to provide children with warm, safe, and stimulating teacher-child interactions before and during COVID-19.
- Teachers completed VKRP assessments as expected in the fall of 2019 and spring of 2021. This evaluation was not designed to test the impact of STREAMin³ on VKRP. However, children made gains in their school readiness skills from the fall of 2020 to the spring of 2021. We do not know whether these gains were diminished due to COVID-19 disruptions.
- Coaches successfully completed CLASS® observations, and teachers successfully completed VKRP assessments when possible. These tools were successfully integrated into the STREAMin³ model, and they align with VDOE expectations that ECE programs use a standardized tool to understand teacher-child interaction quality (CLASS®) and children's development of school readiness skills (VKRP).

Key Findings (continued)

Prior to COVID-19, teachers were very successful at using STREAMin³.

- Teachers attended ~85% of the expected coaching sessions. On average, each teacher engaged in ~15 sessions with their coach.
- Teachers attended 88% of the expected group PD sessions. On average, each teacher engaged in ~7 group PD sessions.
- Coaches observed teachers' implementation as being of moderate to high quality. Average observation ratings were above 2.5 on a scale of 1 (not observed) to 3 (observed with high fidelity).
- Teachers reported implementing 62% of the STREAMin³ curricular components. They reported the strongest implementation for STREAM Stories, Core Skill Routines, and STREAM Group Activities which we consider to be major components of the curriculum.

Teachers stayed engaged through a difficult year during the COVID-19 Pandemic.

- In Phase 2 (July 2020 through June 2021, after the onset of COVID-19) teachers attended coaching sessions 91% of the time. In this phase, coaching sessions were scheduled monthly rather than bi-weekly, and teachers were not expected to engage in coaching if their classrooms were placed in quarantine for most of the month. This resulted in teachers attending an average of ~7 coaching sessions across the year, most of which were virtual.

Teachers and leaders reported both positive experiences and challenges in implementing STREAMin³.

- Prior to COVID-19, 54% of teachers said they enjoyed using STREAMin³, 30% were neutral, and 16% reported not enjoying the curriculum. Teacher enjoyment improved during the pandemic with 62% reporting enjoying STREAMin³, 28% being neutral, and 10% not enjoying. By the spring of 2021, most teachers said they would recommend the curriculum (64% recommend, 26% neutral, 10% not recommend).
- Leaders reported consistently high enjoyment of STREAMin³. Prior to COVID-19, 85% of teachers said they enjoyed using STREAMin³, 15% were neutral, and 0% reported not enjoying the curriculum. During the pandemic with 70% reporting enjoying STREAMin³, 30% were neutral, and 0% reported not enjoying. The vast majority of leaders would recommend the curriculum (87% recommend, 13% neutral, 0% not recommend). By the spring of 2021, 75% of leaders felt comfortable supporting their teachers to implement the STREAMin³ model.
- Comments from teachers and leaders during the second phase of implementation, during COVID-19, reflected benefits but also substantial challenges to implementing the curriculum virtually.

Conclusions and Next Steps

Despite the substantial undertaking of adopting a new, comprehensive curriculum – and the extraordinary challenges that programs experienced due to COVID-19 – teachers and leaders successfully implemented the STREAMin³ curriculum model. Although program and teacher turnover were high, no leaders or teachers withdrew from the STREAMin³ evaluation. Teachers and leaders reported greatly valuing and being highly satisfied with the embedded professional development system.

The onset and limitations resulting from COVID-19 prompted the Center for Advanced Study of Teaching and Learning (CASTL) team at the University of Virginia (UVA) to partner with programs to develop online supports and asynchronous training opportunities, pushing



us to better understand how these can work for early learning programs. We gathered valuable feedback from teachers, leaders, and coaches that has led to refinements of the STREAMin³ program.

Building on this pilot, future research should rigorously test the impact of STREAMin³ to improve the quality of teacher-child interactions and children's school readiness skills and to continue to understand how professional development supports and coaching can be used to increase the fidelity of implementation in ways that feasible and practical at scale. This pilot did not include teachers and leaders who serve children through family day homes. It will also be important that future research is inclusive of ECE programs across all sectors (public, private, family day homes), as well as educators serving infants, toddlers, and preschoolers that are representative of the diverse ECE communities in Virginia.

Acknowledgments

This report was prepared by the team at [STREAMin³](#) within the [University of Virginia's Center for Advanced Study of Teaching and Learning \(CASTL\)](#) and through current funding and support from the [Virginia Department of Education \(VDOE\)](#). The opinions expressed in this report are those of the authors and do not represent the views of the VDOE or any other funders or advocates of STREAMin³. Correspondence concerning this report should be addressed to Amanda Williford at williford@virginia.edu.

The STREAMin³ curriculum model was developed at CASTL in collaboration with and initial funding from [Elevate Early Education \(E3\)](#), to be used in their model school for children ages one to five, [The New E3 School](#), in Norfolk, VA with the intention to be widely scaled across a variety of early childhood education programs. E3 has continued to advocate for the development and scaling of STREAMin³. Additional prior funding and support was also provided by the [University of Virginia's School of Education and Human Development](#), the [Virginia Department of Social Services](#), the [Obici Healthcare Foundation](#), the [Alleghany Foundation](#), and [ReadyKids Charlottesville](#). We are grateful to the many individuals who worked with us on the design and development of STREAMin³. We wish to thank the generous program leaders, teachers, families, and children who have participated in the STREAMin³ initiative and provided us valuable feedback to improve our curriculum model.

The authors declare that they have no conflicts of interest.

Access [the full report](#).

Correspondence for this report should be addressed to Dr. Amanda Williford at williford@virginia.edu.



SCHOOL of EDUCATION
and HUMAN DEVELOPMENT
CASTL