TinkRworks®

CASE STUDY

When Curiosity Becomes Visible

Bringing STEAM to life in a Montessori classroom



Apple Montessori Schools x TinkRworks
Pilot Program, 20-Campus Network

Executive Summary

What happens when young children are given the tools to build, experiment, and explore how things work? At Apple Montessori Schools, a 22-campus network, this question led to a pilot program introducing hands-on, project-based STEAM learning through TinkRworks. What emerged was more than just engagement, it was transformation.

Students began asking deeper questions, recognizing engineering concepts in the world around them, and most notably, they took ownership of their learning in ways that aligned naturally with the Montessori philosophy of independence, exploration, and purposeful work.

This case study explores how curiosity became visible in the classroom, and how everyday Montessori skills translated into real-world, project-based engineering thinking, as measured across four pilot sessions, and how that momentum is now carrying into a full-scale rollout for the coming school year.

PILOT AT A GLANCE

20
Campuses in Pilot

4
Thematic Sessions

47.1%
Enrollment Growth

> **Parents are eager for meaningful STEM… Because projects can go home, families can see and extend what children are doing.**
>
> — Hema Kumar, Lead PreK Teacher

THE OPPORTUNITY

Rethinking STEAM in Early Childhood



Early childhood education is evolving. Families are increasingly seeking meaningful STEM and STEAM experiences, not as future preparation, but as present-day learning that builds curiosity, confidence, and problem-solving skills.

For Montessori environments, the challenge is unique: how do you introduce modern STEAM concepts while preserving core principles like independence, hands-on exploration, real-world application, and self-directed discovery?

Apple Montessori set out to answer that question through a model rooted in hands-on learning and project-based exploration.

It describes the resulting program on its website as one meant to bring science, technology, engineering, art, and math to life through engaging, hands-on projects designed to spark curiosity and creativity in young learners.

> **Students who've done multiple projects are so confident that they often complete the next step before I've even finished explaining it.**
>
> — Jaylecia Davila, PreK Teacher

THE PILOT

A New Kind of Learning Experience

To explore the potential of STEAM in early childhood, Apple Montessori launched a multi-site pilot program across 20 campuses. The program was introduced as a parent-elected enrichment offering for PreK and Kindergarten, run across four thematic sessions over the school year, each built around its own project: Pushes, Pulls & Pins; Smart Lamp; Art Electric; and Pampered Plant. Parents opted in and covered the cost of participation.

Each session combined a hands-on STEAM project for children to build, guided instruction and introductory coding, and open-ended, project based exploration. Students weren't just following steps, they were engaging in multi-sensory, experiential learning designed to encourage curiosity and iteration, in keeping with how Apple Montessori describes the program on its site: children build, design, tinker, and code, developing critical thinking, problem-solving, and collaboration skills while bringing their creations home.

SESSION	ENROLLED STUDENTS	PERCENT INCREASE FROM PRIOR SESSION
1 – Pushes, Pulls & Pins	170	
2 – Smart Lamp	197	15.9%
3 – Art Electric	228	15.7%
4 – Pampered Plant	250	9.6%

Enrollment showed a clear upward trajectory across the pilot year. In addition to the TK and Kindergarten students following the full four-project sequence, Apple Montessori's elementary school program contributed 35 students who took part in Sessions 1 and 3. These students did not participate in sessions 2 and 4, as their programs were designed to spend more time on sessions 1 and 3 allowing for deeper study. Because that's a difference in program design rather than a drop in participation, the enrollment figures below reflect the students who followed the standard four project sequence, so the trend line shows the steady growth the pilot produced.

On that basis, enrollment climbed from 170 students in Session 1 to 197 in Session 2, a gain of about 15.9 percent. It then rose to 228 in Session 3, up roughly 15.7 percent, and continued to 250 in Session 4, an increase of about 9.6 percent. Across the full pilot year, enrollment grew by approximately 47.1 percent, reflecting rising interest and strong word-of-mouth within the school community.

CURIOSITY IN ACTION

What Changed in the Classroom

01

From Participation to Anticipation

Students did more than just engage with the program. They started looking forward to it. As Hema Kumar, a PreK Lead Teacher, put it, the children are genuinely excited about TinkRworks and ask every time they see her whether "today is a TinkRworks day." This shift, from assigned activity to anticipated experience, was one of the earliest and most powerful indicators of success.

02

Seeing the World Differently.

As students built and experimented, something deeper began to happen. They started recognizing STEAM concepts beyond the classroom. Jennifer Henkel, a PreK Teacher, described how the children now walk around pointing out motors, sensors, and electricity in their everyday environment, noting how deeply curious it has made them about how things work. Learning extended beyond the project itself; it became a lens through which students interpreted the world.

03

Confidence Through Creation.

With each session, students grew more confident navigating coding platforms independently, understanding cause-and-effect relationships, and completing steps with minimal guidance. Jaylecia Davila, a PreK Teacher, observed that students who have done multiple projects are so confident that they often complete the next step before she has even finished explaining it. Confidence was built through experience.



FROM PRACTICAL LIFE

To Real Engineering

01

Everyday Skills, Elevated.

One of the most meaningful insights from the pilot was how naturally STEAM aligned with Montessori practices. In Montessori classrooms, students develop foundational skills through practical life activities, using tools, manipulating objects, and working independently. Through STEAM, those same skills took on new meanings. Estelle Lourens, a PreK Teacher, described how her students independently gather their pieces, build their own projects, and connect what they've practiced in practical life, like using screws and bolts, to real engineering tasks. Students began to see that the skills they practice daily have real-world applications, that their work has purpose beyond the classroom, and that they are capable of building and understanding complex systems.

02

Independence in Action.

The Montessori emphasis on independence became a powerful driver of success within the program. Students selected materials on their own, progressed through builds at their own pace, and took ownership of problem-solving. Rather than relying on constant instruction, they developed autonomy, mirroring the mindset of real engineers and creators.

03

Hands-On Learning Meets Modern Technology.

The tactile nature of the projects reinforced Montessori's learning-by-doing philosophy while introducing modern tools like coding interfaces. Henkel noted that the children move around the browser and drag coding blocks like it's second nature. This combination created a bridge between traditional Montessori methods and contemporary STEAM learning.

> My students independently gather their pieces, build their own projects, and connect what they've practiced in practical life—like using screws and bolts—to real engineering tasks.
>
> — Estelle Lourens, PreK Teacher

WHAT WE LEARNED

Key Insights from the Pilot

Engagement is immediate and sustained. Hands-on, project-based learning naturally captures student attention and maintains it over time, as reflected in enrollment that grew every session across the pilot year. Curiosity drives deeper learning, since when students connect concepts to the real world, learning becomes meaningful and memorable. And Montessori principles and STEAM reinforce each other: independence, hands-on exploration, and self-directed discovery proved to be natural complements to project-based engineering thinking, rather than a departure from Montessori philosophy.

> Now they walk around pointing out motors, sensors, and electricity in their everyday environment. It's made them deeply curious about how things work.
>
> — Jennifer Henkel, PreK Teacher



LOOKING AHEAD

Scaling the Program for the Coming Year

Building on a full pilot year of rising enrollment, growing student confidence, and increasingly comfortable teacher facilitation, Apple Montessori is moving from pilot to full program for the coming school year. The school has prepared 1,200 project kits across four projects to serve the same Transitional Kindergarten and Kindergarten population that drove the pilot's enrollment growth through an entire year of TinkRworks. Apple Montessori also has plans to expand the program into higher grade levels, bringing hands-on STEAM education to even more students in the year to come.