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TRANSFORMATION IN ACTION

Protecting Time for Curiosity in PreK



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PreK is framed as play, social development, and readiness. That framing becomes the foundation for decisions about time, space, materials, and adult attention. PreK is also where children start forming their identity as learners. That identity takes shape through what adults consistently expect in daily routines: whether children are expected to ask questions, persist with a problem, regroup when something doesn't work, or explain their thinking. These expectations are taught through a variety of actions. Quick answers teach children that thinking is handled by adults. Dedicated thinking time teaches children it is safe to ask questions, test ideas, and explain their thinking. When science, technology, engineering and math (STEM) inquiry isn't built into the design of the program, those expectations are inconsistent rather than being shared across the school. As a result, children's opportunities to develop as thinkers can fluctuate within the same building.

Evidence From Research + Theory

Research on early learning and development indicates that children begin forming beliefs about themselves as learners through repeated daily experiences. These beliefs develop through what children are invited to do, how adults respond when learning feels difficult, and whether effort and explanation are expected parts of the process.

Studies of inquiry and cognitive development describe learning as an active cycle. Children explore materials, test ideas, notice patterns, and revise their thinking based on results. When learning environments protect time for this kind of work, children develop habits connected to attention, explanation, and persistence. These habits do not develop through exposure alone. They require adults to create conditions where thinking is expected and supported.

Research on identity and self-concept in early childhood connects these experiences to how children approach challenge. When children regularly experience opportunities to try, adjust, and explain their thinking, they begin to see themselves as capable learners. When those opportunities are limited, children may rely more heavily on adult direction and take fewer risks when learning becomes difficult.

Work on early metacognition further shows that children begin learning how to monitor effort, manage frustration, and decide whether to continue when tasks are challenging. These habits form well before formal academic instruction begins and are shaped by adult expectations embedded in classroom routines.

This research matters for STEM identity because early STEM learning is not defined by content coverage. It is shaped by environments that invite problem-solving, experimentation, and explanation as normal parts of learning. When programs intentionally design for these experiences, children build a sense of themselves as thinkers and problem-solvers. Without a shared design that anchors the core focus while inviting individual teacher style, STEM identity develops unevenly and is tied more to the chance of a specific classroom than to a reliable program-wide experience.



Reframe: Where STEM Identity Lives

If STEM identity is built through repeated experiences, then those experiences have to be designed across the program.

In PreK, that design happens through decisions that extend beyond classrooms. The way that schedules are built allows ample time for students to make choices and to explore. The setting of the space and the type of materials presented either encourage or hinder children's ability to build, test and revise ideas. Professional learning supports how adults respond when children hesitate, struggle, or need time to think.

When inquiry and persistence are part of adult learning conversations, expectations become shared. Professional Learning Communities (PLCs), Multi-Tiered Systems of Support (MTSS) discussions, and Social Emotional Learning (SEL) systems can reinforce how children are supported when learning feels difficult. This alignment helps adults develop a common understanding of productive struggle, scaffolding, and when to step back so children can do the thinking.

Without shared expectations, children's opportunities can vary greatly by classroom. Some students experience consistent invitations to explore and explain. While others encounter fewer chances to stretch their thinking. Those differences accumulate and impact how children come to see themselves as learners.

Designing for STEM identity places responsibility at the school level. It requires leaders to embed shared expectations into schedules, environments, and adult learning systems. When these conditions are built into the structure of the school, STEM identity becomes more deeply rooted. It is reinforced across classrooms and sustained through staff transitions.



Origin of the Design

When I was asked to design a PreK program, my superintendent said, "Make it state of the art." That was the starting point.

As a team, we understood the state of the art to include strong relationships, play, and developmentally appropriate practice. We began asking ourselves what it would look like to help students feel safe asking questions, exploring things, and explaining their thinking. We wanted children to use the alphabetic principle to express ideas through dictation and emerging writing, to develop number sense through discourse and problem-solving, and to engage with STEM as a way of exploring and making sense of the world.

As we worked to translate those ideas into our daily practice, questions began to surface. How much complexity was appropriate for three- and four-year-olds? How much independence felt reasonable? In literacy conversations, for example, there were differing opinions about how broadly children should be exposed to letters and sounds. Those discussions tapped into our beliefs regarding what children could do as thinkers.

Similar questions came up concerning the instructional materials and projects we were using, such as worksheets and letter-of-the-week projects. Many common PreK tasks are designed to move a group through the day smoothly. Everyone completes the same steps, which results in similar finished products.

In time, we began noticing how those tasks shaped children's roles in learning. When the product is predetermined, children have fewer opportunities to make decisions, explain their thinking, or approach a task in different ways with varying materials.

These practices were familiar and widely accepted. They reflected long-standing expectations about what successful PreK work should look like.



We also began paying closer attention to everyday interactions. During transitions and informal conversations, we noticed how quickly some adults provided responses for children. For some, silence felt uncomfortable. Waiting for children to organize their thinking required purposely giving wait time, which was a different way of interacting with younger students for some of us.

These observations shifted our focus from individual activities to shared understanding. We realized that designing a state-of-the-art program meant learning together how to support children's thinking while honoring play and developmentally appropriate practice. Professional learning structures became spaces for reflection and peer support. PLCs, MTSS conversations, and SEL practices helped us talk about self-regulation, scaffolding, and independence in concrete ways.

We developed a more consistent approach as we worked together. Children experienced greater flexibility in how they expressed ideas. Adults became more comfortable allowing thinking to unfold. What began as a design goal gradually became a shared stance about learning.



Expansion of Concept

As we grew together as a team and built a concept of what we wanted PreK learning to look like day to day, I kept asking the same question: how does STEM look for three and four-year-olds in our community? I wanted STEM to be more visible in our program, in a way that matched the inquiry we were already working to build across classrooms.

These questions led me to email the Chicago Children's Museum. The goal was to create a learning environment, like the museum, inside our school that could support curiosity, problem-solving, and discourse in a consistent way. We wanted to build a dedicated space that matched the direction we had already set as a team.

The museum helped us think about the classroom as a designed environment. The work included creating a shared plan for the room and building out permanent stations that invited children to investigate and return to ideas consistently. The design leaned on open-ended materials, such as rocks, ramps and pulleys, and animal hides, along with routines that encouraged children to wonder, test, and share what they noticed.

That space also changed adult learning. Teachers needed time to learn the materials, practice how to interact with children in the room, and get comfortable letting children stay with a problem long enough to develop an idea. The project included teacher training and continued support, so the classroom did not become a "special event" room. Our STEM room became a prototype. Since then, the museum has refined the *Curiosity Classroom* model and replicated it in 25 schools throughout Chicago.

Implications for Principal Leadership

It is easy to treat PreK as childcare instead of school. I made that mistake early on as an elementary school principal. I was focused on K-6, and I was especially focused on the accountability grade levels and the urgent gaps we were seeing. I believed that PreK was preparing students for kindergarten and that my attention needed to stay on those high-stakes grades. What I came to understand is that PreK is where many of the learning patterns I was trying to address later were already forming.

For principals, this work starts by treating early learning as foundational and recognizing it as the place where children learn how learning works and how thinking develops.

One way to approach this work is to look at PreK design through three leadership lenses.

A Leadership Lens for Early Learning Design:

Presence and Instructional Attention

Principals who believe that PreK is foundational can be observed in early learning classrooms discussing what children are being invited to problem-solve, discuss, and inquire about. They also include PreK in instructional conversations, so early learning is part of how the school understands teaching and learning as a whole.

Designing Conditions That Support Thinking

Young children engage in complex thinking when the environment is conducive and makes it safe to ask questions, experiment, and dialog. Schedules, materials, and the use of space support opportunities to investigate, experiment, and return to ideas. When these conditions are intentionally designed, problem-solving and inquiry become part of the early learning program.

Investing in Adult Learning Through Observation

Observation is the gateway for adults to notice what children are thinking, doing and saying. Through observation, adults can get a peek into how their students are reasoning and where support is needed to extend their ideas. PreK teachers need opportunities to observe, reflect and talk with each other about student thinking. It's the school leader's role to facilitate these conversations within professional learning opportunities so that teachers learn from each other's strengths and can problem-solve together.

A Call To Action

The work of PreK STEM is to protect curiosity. When learning environments allow children to explore, test ideas, and revisit their thinking, children come to expect that effort and explanation are part of figuring things out.

When these conditions are consistent, STEM identity becomes an intentional part of the early learning program and shapes how students approach challenges long after PreK.

References

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Erica Glenn is the co-owner of [Max Results LLC](#) and a former public school principal who led elementary and early learning campuses. Her work focuses on early learning and the systems adults build that shape what children experience day to day. She has supported the Chicago Children's Museum through Curiosity Classroom assessment and has developed and delivered state-approved professional learning for school leaders.



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