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A Funny Thing Happened on the Way to PD: Revising PDS Leaders' Roles to Support Children's Learning Directly

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ABSTRACT: School leaders typically encounter district policies and procedures that make it difficult to facilitate school improvement efforts effectively (Bottoms & Fry, 2009; Bottoms & Schmidt-Davis, 2010). When the San Antonio Independent School District earned a state level distinction as a District of Innovation, the PDS principal and university faculty liaison took advantage of this opportunity to develop innovative curricular initiatives, including the implementation of a bi-weekly half-day of planning and professional development for elementary teachers while students take field trips and participate in Curiosity Corner, an 80-minute block for engineering challenges. When the PDS leaders' plan to garner enough parent and community volunteers to sustain Curiosity Corner failed, they shifted their attention from directly supporting *teachers'* learning during these half-day enrichment sessions, instead taking direct responsibility for planning and facilitating *student* learning. This unexpected turn of events brought with it unanticipated benefits to both students and PDS leaders.

PDS Essentials: 4 & 8

Engaged in PDS relationships with local schools for more than 25 years, Trinity University entered into a formal partnership with Lamar Elementary and San Antonio ISD in spring 2013. Lamar's principal, himself a Trinity graduate, and the university liaison have worked closely together since the launch of Lamar as a Professional Development School. During their fourth year of collaboration, the school district became recognized by the Texas Education Agency as a District of Innovation, a designation that allows schools within the district to request exemptions from the Texas Education Code. District principals were encouraged to submit curricular innovation proposals to implement during the 2016-17 school year.

School leaders typically encounter district policies and procedures that make it difficult to facilitate school improvement efforts effectively (Bottoms & Fry, 2009; Bottoms & Schmidt-Davis, 2010). Lamar's principal and university liaison were elated to think outside the box and immediately began to brainstorm innovative initiatives for the school that currently serves 380 mostly low-income, Hispanic students in early childhood-6th grade. They strove to connect their proposed initiatives to one or more of the school's five overarching goals for students: curiosity, collaboration, cultural competence, emotional intelligence and advocacy. The district approved all proposed initiatives. This article focuses on one specific initiative: bi-weekly, half-day release time for teacher planning/professional learning while students engage in enrichment activities.

When designing the half-day student enrichment activities, the principal and university liaison first created multi-aged groups consisting of kindergarten-2nd graders and 3rd-6th graders, believing that older students could mentor and support younger learners. They then established a rotation schedule for the multi-aged groups, including two of the three following activities every other week:

- an 80-minute field trip to partner organizations within walking distance of the school, including both a nature, science and cultural museum as well as a community arts center;
- an 80-minute extended PE period; and
- an 80-minute period for engineering challenges called "Curiosity Corner".

The principal and university liaison initially believed that the school counselor and family specialist could coordinate field trips to the local nature/science/culture museum and arts center while parent and community volunteers could coordinate Curiosity Corner activities. That would free the two up to work directly with teachers during their bi-weekly 3-hour planning block, supporting teachers' design and implementation of other curricular initiatives that the district had approved.

Coordinating this ambitious half-day student enrichment program, however, turned out to be a much bigger undertaking than either one of them realized. Setting up the schedules with museum and arts center partners, grouping students into multi-age teams, working through the logistics of getting students to and from different rotations, recruiting and training volunteers, and designing and facilitating Curiosity Corner activities required them to immerse themselves in the *student* side of this initiative rather than the *teacher* side.

Curiosity Corner

The two PDS leaders were particularly excited about Curiosity Corner. The most important role a school plays is to teach

children *how* to learn. Doing so prepares them well for the future since most of the jobs of the future do not yet exist (Friedman, 2005). Knowing that the U.S. needs more students pursuing STEM fields (National Science Board, 2010), the principal and university liaison envisioned Curiosity Corner as an opportunity to engage students in STEM challenges. Exposure at the elementary level to STEM activities positively impacts their perceptions and dispositions (Bagiati, Yoon, Evangelou, & Ngambeki, 2010).

The university liaison took responsibility for designing Curiosity Corner activities, including developing detailed lesson plans and purchasing needed materials using PDS funds. The liaison, principal and school librarian then each solo taught these activities to multi-age groups of 20-25 students each week. They approached this 80-minute block of time called "Curiosity Corner" as an opportunity for students to engage in a variety of design challenges.

They launched Curiosity Corner by participating in the International Cardboard Challenge. After collecting thousands of boxes, students first designed then built their own cardboard creations then shared them with families during the school's annual Fall Festival. While this project spanned several weeks, most challenges lasted a single 80-minute period. Students constructed towers, bridges, boats and other structures that had to meet certain design requirements. For example, students were challenged to design and build a boat using tinfoil, Styrofoam cups, straws and 10 inches of tape that could hold the greatest number of "passengers" (represented by pennies) without sinking. In another challenge, students worked together in dyads or triads to create a tower out of 15 straws, 3 feet of string and 3 feet of tape then to suspend a bucket from their tower (plastic cup). The bucket had to hold weight without collapsing the tower.

Outcomes for Students and PDS Leaders

Beyond improving student achievement, the principal and university liaison did not identify hoped-for outcomes for either the teachers or the students at the outset of the bi-weekly, half-day teacher release time and student enrichment initiative. The two spent so much time and effort coordinating the student side of the initiative that it left little time to set well-defined goals and develop a coherent assessment plan. That said, they took deliberate steps toward the end of the first year to collect data to determine evidence of impact on students, including:

- focus group interviews with 3rd-6th graders to understand how they experienced Curiosity Corner, what they appreciated about it, and suggestions they had for the next year;
- an anonymous, online teacher survey to determine whether and how they believed their students benefited from participation in Curiosity Corner;
- anecdotal evidence drawn from their direct work with students; and
- student achievement data, comparing 2017 state tests results in 5th grade science to the previous year.

Because the principal and university liaison were not able to work directly with the teachers in year one of this initiative to support their planning efforts, they did not formally measure impact on teachers.

Impact on Students

Students benefitted from Curiosity Corner in several distinct ways. First, participating in engineering activities helped them to develop a growth mindset. The university liaison deliberately selected challenges and modified design parameters to ensure that students encountered difficulty. Students rarely experienced immediate success. In the fall semester, it was not unusual for students to cry in frustration or to want to give up in the face of challenge. The PDS leaders shared read alouds like *The Most Magnificent Thing* by Ashley Spires and *Everyone Can Learn to Ride a Bicycle* by Chris Raschka to reinforce the message that mistakes/roadblocks help us gain new insights and determine what does not work, valuable information on the path to determining what does. The leaders encouraged students not only to put forth effort but also to try new strategies and to collaborate with their peers, important aspects of growth mindset (Dweck, 2015). By spring, students' tears had largely dried up when engaging in challenges. They exhibited greater resilience and perseverance. They encouraged each other not to give up in the face of challenge. As one student explained during a focus group interview held with 3rd-6th graders and facilitated by the university liaison at the end of the year, "Some of us thought we couldn't do certain challenges. But then we started, and we got better and better. The more you do it, the better you get." Another added, "I liked it because it gave us a chance to show our growth mindset" while a third chimed in, "Whenever we messed up you would tell us it's okay."

Beyond developing and deepening their growth mindset, students developed cross-grade relationships. So much of the traditional school day is spent in grade level silos. Rarely do students have sustained opportunities to interact in multi-age activities. Curiosity Corner brought together kindergarten-2nd grade students as well as 3rd-6th graders. The PDS leaders routinely witnessed younger students seek out the support of their older peers and older students step into leadership roles, including managing conflict and promoting perseverance. Such multi-age experiences enable that kind of natural mentoring to occur (Bacharach, Hasslen & Anderson, 1995). As further evidence of how much students appreciated working in multi-grade teams, many students stopped the university liaison in the hall the following year to ask why they had to attend Curiosity Corner with only their classmates rather than multi-aged groups as had been the case the previous year.[1]

Students also came to view themselves as engineers. The principal and university liaison spent time discussing what the term 'engineer' meant early on: engineers are people who work

with many different types of materials to design and build things. They have to figure things out and use the materials they have available. Sometimes they run into challenges. Sometimes their work goes really smoothly. Students gained confidence in their ability to complete engineering challenges successfully. As a student explained, "I didn't like Curiosity Corner – I *loved* it. It taught me how to make stuff, and it got me to do challenges at home. I'm a creative person." Research has shown that when elementary students engage in such activities, they become more aware of the rich array of science and engineering career paths. Building an early interest in STEM fields is a real benefit to students as many of the jobs they will assume in the future will require creativity, collaboration and design work.

The majority of the teachers whose students participated in Curiosity Corner (grades kindergarten-6th) believed that their students benefited from doing so. Thirteen teachers were invited to complete an online, anonymous survey to capture their perspectives on the 2016-17 Curiosity Corner initiative. Twelve of the thirteen responded. When asked if students benefited from participation in Curiosity Corner, 77 percent strongly agreed or agreed, 8 percent felt neutral, and 15 percent disagreed or strongly disagreed. Specific benefits named in teachers' survey responses included "practicing growth mindset that we spoke about in class in a playful environment," "collaborating with other grade levels," and "applying science, mathematical and literary understandings in different contexts from fairy tale STEM challenges to boat building."

In addition to these dispositional benefits, students also improved on traditional assessment measures. The state formally assesses science achievement in only 5th grade at the elementary level. Table 1 below provides data for Lamar students as well as district and state student performance on the State of Texas Assessment of Academic Readiness (STAAR). As the table notes, the Texas Education Agency considers three levels of passing the state science exam: "approaches," "meets" and "masters."

Before the launch of Curiosity Corner in 2016, 82 percent of Lamar 5th graders received a score of "approaches." Of that 82 percent, 35 percent scored at the "meets" level. In 2107, while the percentage of students who received an "approaches" score dipped slightly, a higher percentage of Lamar 5th graders (45 percent) scored at the "meets" level, and 22 percent scored at the "masters" level. This STAAR data suggest that Lamar's top science achievers closed the gap between school and state performance at the "meets" level and outperformed their state peers at the "masters" level in just one year. Our fifth graders appeared to improve their science knowledge and skills as evidenced by this state exam.

While most of the data collected indicated that students benefited from participating in Curiosity Corner, two teachers noted in the online survey that dramatically altering students' daily schedule every other week to make room for afternoon enrichment activities – including Curiosity Corner – created classroom challenges in the first year, particularly for students in younger grades. Interrupting the predictability of young children's schedules proved difficult, as did teachers' ability to teach all content on shortened days. A teacher also noted that when the liaison and principal sometimes combined their groups so that 40-60 students participated in design challenges at a time, young students sometimes lacked necessary support, even with parent volunteers on hand to assist. This was sometimes necessary, however, when the principal was required to attend district-level meetings off campus or to address issues that arose while students were on field trips at the same time Curiosity Corner was offered.

Benefits to School and University Leaders

Like the students they supported during Curiosity Corner, the PDS leaders also benefited in many important ways, including deepening their relationships with students. Although the principal routinely tutors small groups and the university liaison facilitates a weekly afterschool Yoga Club for students, years had passed since either one regularly taught classroom-sized groups of elementary students. They got to know the students in new ways, really observing and assessing their growth over the course of the year.

They also deeply appreciated the chance to strengthen their teaching practice. The bulk of their instruction typically focuses on adult rather than student learners. Learning to effectively gain and sustain students' attention across grade levels, design developmentally appropriate yet challenging engineering tasks and work through real-time challenges that arose deepened their appreciation for the incredible lengths their teachers go to day-in and day-out to provide content-rich, student-centered, minds-on learning opportunities for Lamar students.

One of the unexpected challenges that the pair encountered arose from their efforts to help students learn to work collaboratively. They deeply believed that engineering challenges create opportunities for students to develop design thinking, communication skills, the capacity to share materials and collaborative negotiation skills. The principal and university

Table 1. Percentage of 5th Graders from Lamar, District and State on Science Exam

	Lamar 2016	*District 2016*	*State 2016*	*Lamar 2017*	*District 2017*	*State 2017*
Approaches (pass)	82	65	79	78	63	79
Meets (on level)	35	28	47	45	29	52
Masters (college ready)	–*	7	16	22	7	19

*not enough students to determine score

liaison routinely asked students to first brainstorm their own design ideas before then being paired with a partner or placed in a triad. Once in dyads or triads, students were expected to share their individual ideas before combining design elements to which they could all agree. The dyad or triad then worked together to construct a single item, be it a boat, tower, bridge, etc.

While students enhanced their ability to work together, conflict often erupted right at the end of Curiosity Corner. The principal and liaison realized that arguments often broke out around *who* got to take the tower, boat or bridge home. Because they had worked collaboratively, there was only one construction per every two or three children. Tears often surfaced as the younger students argued over who would proudly share their design efforts with their friends and families. The PDS leaders really puzzled over how to address this conflict that arose just as kids were ready to leave Curiosity Corner. They did not want students fighting over their engineered inventions; they also did not want to give up fostering collaboration. One solution that worked gradually over time included pairing students up to share their individual designs then charging each pair to construct their *partner's* design rather than their own. Doing so required the two students to communicate their design vision (both in drawings and verbally) and to support each other as they each brought their partner's design to life. It also produced two products so that every child had one to take home. A separate solution involved designating a space in the school to proudly display group designed projects so that no single child took a completed project home.

Working directly with students also enabled the principal and university liaison to draw on their teaching practice when supporting novice and experienced teachers' learning. Their empathy for teachers' challenges had deepened because they could easily connect teachers' struggles to their own challenges faced in Curiosity Corner. The PDS leaders also were better positioned to share the strategies they implemented to harness students' boundless energy and sustain their sometimes-short attention spans. The PDS leaders and teachers also puzzled through challenges together when solutions to problems were not always clear, be it in the classroom or Curiosity Corner.

Next Steps

Given the important ways that students benefited from participation in Curiosity Corner in year one, the PDS leaders were committed to maintaining the initiative in year two. As noted earlier, however, by taking responsibility for coordinating Curiosity Corner themselves, the principal and university liaison had been unable to support teachers' planning or to offer professional development during their bi-weekly half-day planning blocks. They determined that the benefit of working directly with students did not outweigh the drawback of lacking direct access to teachers and their learning. Therefore, in year two of this initiative, the PDS leaders made Curiosity Corner a regular part of students' rotations through specials. Students now attend Curiosity Corner as a 45-minute period along with music, art, PE and library or counseling once a week (in addition to PE daily the remaining four days per week). University funding enabled the principal and university liaison to hire a retired museum director to coordinate and teach Curiosity Corner on a part-time basis.

Although students no longer experience multi-age groups in this revised schedule and structure, the current set-up creates new benefits and learning opportunities. First, the new Curiosity Corner coordinator has expanded the scope of activities offered in year two. Whereas in year one students focused almost exclusively on single-session engineering challenges, the new coordinator designs 3-4 week mini-units that involve STEAM activities directly linked to state science standards. In addition, the Curiosity Corner coordinator modifies her units for kindergarten-first, second-third, and fourth-fifth grades. This means that the units are more developmentally appropriate and geared toward the specific needs and abilities of particular age groups this year. For example, after assembling commercial marble runs in year two, the next mini-unit focused on age appropriate explorations of simple machines including the lever, wheel and axel, pulley, inclined plane, wedge and screw. Kindergarten and first grade students explored the concepts of size, speed, gravity, angles and motion by creating and testing marble ramps using magnetic track coaster kits. Second and third graders were challenged to use materials in a "mystery bag" to create a marble run in which the marble traveled 40 centimeters at the end of the run. Fourth and fifth graders designed, created and tested a marble run from scratch.

Furthermore, because the coordinator is bilingual, she teaches English- and Spanish-dominant students together. This did not occur in year one. The new arrangement directly supports the school's recent decision to phase out its one-way transitional bilingual program in order to implement a dual language program.

No longer responsible for coordinating Curiosity Corner, the principal now regularly meets with teachers to support their planning and development. Because planning blocks occur over a 2-day period in year two as opposed to a single afternoon in year one, the principal routinely meets weekly with every grade level team. This focused, ongoing support as grade level teams design curricular units, analyze student data and work through dilemmas of practice has provided the PDS leaders with new insights into teachers' strengths and areas for continued growth. They have used these insights to design ongoing faculty meetings and extended professional development activities in year two.

Shifting the PDS leaders' work from students to teachers in year two begs the question whether or not the direct coordination of student initiatives such as Curiosity Corner is sustainable for administrators. The answer depends on the needs and goals of a campus. If a school leader's goal is to connect to and work directly with students, then it may be quite possible to focus his/her attention on coordinating a student initiative, particularly if the teaching staff already possesses strong planning, instructional and assessment practices. If, however,

the most pressing goal is to develop teachers' practices, then continuous direct involvement with students becomes more difficult to maintain.

Anecdotal evidence suggests that *both* students and teachers are benefiting from the year two structure. A highly qualified coordinator is moving Curiosity Corner forward in new and exciting ways for students while the principal and university liaison are better assessing and meeting teachers' professional learning needs. That said, they intend to periodically teach Curiosity Corner lessons in order to maintain their teaching practice and relationships with students. They highly recommend such an arrangement where university and school leaders directly and regularly support both student *and* adult learners.

Notes

Although preferable to maintain multi-age groups, scheduling difficulties led PDS leaders to structure Curiosity Corner differently in year two. In order to give teachers weekly (rather than bi-weekly) grade-level planning/PD time, Curiosity Corner is now a 45-minute special like music, library, and PE. Curiosity Corner is offered every week to students in kindergarten-5th grade, and students participate with their grade-level peers. SUP

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