



Hawthorne School District:

Out-Of-The-Ordinary Results for
Early Learners in Mathematics



BACKGROUND

This profile of the Hawthorne School District is one of three the California-based Heising-Simons Foundation asked Education First, a national education policy and strategy consulting firm, to write. [The profiles](#) are designed to help more California policymakers, education leaders and funders see how different communities are [prioritizing early learning in mathematics to improve outcomes for their youngest learners](#), especially for low-income students and students of color.

“Early mathematics” encompasses any formal or informal instruction for learning for children from birth to age 8, when children begin to conceptualize what numbers are and how to use them; develop early mathematical thinking, such as counting and understanding spatial relationships and patterns; and develop beliefs about their own mathematical abilities. Some [ground-breaking research](#) suggests that early mathematical skills, such as knowing numbers and ordinality, correlate more strongly with student success in later elementary school than do other indicators, such as literacy skills and behavior, and that children who do well in math early tend to do very well throughout school.

The Hawthorne School District’s profile provides an overview of how the school district works to improve the quality of mathematics instruction for all students but focuses on students from kindergarten to grade three.

For additional information on the Heising-Simons early math initiative and an overview of the profiles, please see the [introduction](#) to the profiles or go to the Heising-Simons Foundation [webpage](#). ■

"California's greatest contradiction is almost Dickensian," observes John Myers of the *Los Angeles Times*, reporting on a 2019 analysis by the Public Policy Institute of California. "In a state often cited as home to scores of billionaires, almost 4 in every 10 residents are living at or near the poverty line." According to the institute's research, Los Angeles County holds the top spot on the list with a 23 percent poverty rate.[1]

With wealth concentrated in the county's westside, upscale communities such as Beverly Hills, Santa Monica and Bel Air, most of the county's poorer residents—including families of immigrants, Hispanics and African Americans—make their homes in the suburbs spreading east across the Los Angeles basin. Through this lens, Hawthorne School District's schools are like many others in the area, serving a diverse and largely low-income student population: 88 percent of the district's students qualify for the federal free and reduced lunch program.

The district's concerted efforts to enhance the skills of its teachers are helping this diverse and low-income population achieve above-average levels in mathematics in California. Starting in third grade—the first time students are assessed statewide—the results of the school district's approach manifest: Last year, the percentage of third-graders

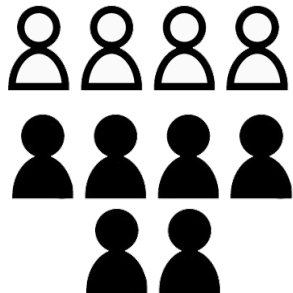
from poorer families meeting state standards nearly matched the performance of all the district's students. At 52 percent, it was more than 15 points higher than the statewide average for low-income third-graders and even bested the statewide average for all third-graders (which is about 49 percent).

Close to 9,000 children from pre-kindergarten through twelfth grade attend Hawthorne public schools. Located in the flight path of Los Angeles International Airport, the district serves an urban population that is 71 percent Latino and 21 percent African-American. Thirty percent of its students are English-language learners. Seven elementary schools, three middle schools and a charter high school—the Hawthorne Math and Science Academy (HMSA)—populate the district.

Student math achievement has long been a priority, according to district leaders, and *U.S. News and World Report* ranks Hawthorne's math and science academy as one of the nation's best high schools. However, California's adoption of Common Core standards in English/language arts and mathematics in 2010 caused district leaders to examine more deeply what was needed to improve teaching and learning for all students and what it would take especially in earlier grades to ensure that students were on track to meet the new expectations.

LOS ANGELES COUNTY

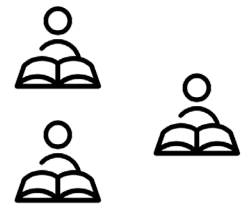
In California, almost 4 in 10 residents live at or near the poverty line



Los Angeles County has the highest poverty rate at **23** percent

HAWTHORNE SCHOOL DISTRICT

9,000 students



from pre-k through 12th grade attend Hawthorne public schools

88 percent of the student population qualifies for the federal free and reduced lunch program

[1] See Myers, John. "Millions of Californians are poor, and they don't always live where you'd expect." *Los Angeles Times*, 29 July 2018, accessed 25 August 2019.

A SHIFT IN MATH EXPECTATIONS FOR STUDENTS

As part of spelling out what students need to know and be able to do—grade by grade—to succeed after high school, the Common Core’s writers examined standards already in use by states, what top-performing countries expect of their students, what research suggests about student learning, and what both employers and college faculty expect from high school graduates in mathematics, writing and problem-solving.

Reflecting these insights, the standards in math incorporate three important “shifts” from the way most students in the United States had been learning:

- ✚ A deeper focus on fewer math topics during each grade.
- ✚ Greater coherence across students’ academic careers, by linking topics and thinking across grades.
- ✚ Increased rigor within the discipline of math, by asking students to master key math concepts, develop procedural skills and fluency and apply math in different situations.[2]

“Mathematics is not a list of disconnected topics, tricks or mnemonics” but “a coherent body of knowledge...of interconnected topics,” the writers of the Common Core standards explain.[3] For Californian Phil Daro, a former high school algebra teacher and one of the standards writers, the importance of asking students to make conceptual sense of the discipline is essential. In the past, Daro notes, math instruction in many places emphasized only memorization and not discovery; the approach was, he says, “Listen to what I say. And do what I say. Don’t make any sense of it; it will only be confusing. That’s the message we’ve been giving. That’s a tragedy.”[4]

“We have a math crisis in this country. Children everywhere are failing. Inequities are widespread. Why? Because math classrooms are boring, procedural, rote learning calculations. Just as bad, we tell children all the time that they can’t do well in math. But real math is visual, creative, exciting and accessible.”

—Jo Boaler, “Start a Math Revolution,”
[Aspen Ideas Festival presentation \(June 29, 2015\)](#)

While most states adopted the new Common Core expectations (or similar versions) in 2010 or 2011, changes in day-to-day student learning has been slow to trickle down to classrooms, as reflected in statewide testing results.[5] Perhaps not suprisingly, expecting changes in decades-old assumptions about what and how students learn in math (and which students can learn in math)—as the Common Core math standards aspire to—is difficult to operationalize at scale.

In Hawthorne School District, however, success in changing both assumptions and achievement has been more evident. There, educators say, school leaders were committed early on to providing teachers with significant support and help in changing their practices to support the new math expectations. They also paid attention to the early grades and how to begin building more computational fluency and student capacity for problem-solving in young learners as the foundation for future success in math.

Many of Hawthorne’s approaches are familiar and used by other districts: organizing ongoing professional learning opportunities for teachers; examining student achievement data to inform instruction; sponsoring activities that engage parents, such as family math nights and website resources to support math at home; and giving students access to game-based instructional math software for use inside and outside the classroom to practice problem-solving (and also make math fun).

But three efforts the district invests in—with the priority of helping teachers hone new skills for the new expectations—stand out as noteworthy, according to district leaders and educators:

1. Significant content-based **coaching of all teachers** in mathematics, with one coach assigned to each school.
2. A focus on **helping teachers develop students’ conceptual understanding of math** ideas and relationships, especially in the early grades as students learn about numbers.
3. **Regular classroom visits** through each school to pinpoint staff-wide teacher development needs and opportunities to improve teaching in math.

[2] See “[Key Shifts in Mathematics.](#)” *Common Core State Standards Initiative*, accessed 29 June 2019.

[3] Ibid.

[4] Quotations from lectures delivered by Daro on August 12, 2014, at a summer institute operated by Chicago Public Schools, DePaul University and the Erikson Institute.

1. CREATING THE MEANS TO CHANGE TEACHING AND LEARNING: A MATH COACH PER SCHOOL

“In kindergarten through second grade, we are working hard to set the foundation for mathematical discourse, for students to have meaningful conversations about math,” says Erika Ayala, who directs educational services for the district and is a former math coach herself. How teachers get support to set this foundation is what makes Hawthorne somewhat unique among the state’s school districts: It pays for a full-time math coach at every elementary school, using both general operating funds and California’s unique Local Control Funding Formula, which allocates more dollars for students with greater challenges.

Maritza Cruz-Brown, now principal at the district’s Washington Elementary School, was one of the five math coaches hired in 2012 (at the time, each coach was deployed across multiple schools). “The district saw the need for math coaches, especially with the shift to the Common Core,” Cruz-Brown recalls. “At the time, the district wanted to see how math coaching would impact instruction.”

By 2014 district leaders had seen enough progress that they decided to invest fully in teacher coaching as a key strategy for helping teachers change their practices. Today, the district funds full-time math coaches at all its elementary and middle school sites, allowing coaches to dedicate their full attention to the needs of one school and all its teachers, each with their unique needs.

Jennifer Gonzalez, Washington Elementary School’s current

math coach, explains, “Washington is small, with its own mixture of challenges we need to focus on. I’m there five days a week, not spread across the district. I specialize in one subject, math, and I have only 24 teachers to support. It’s like having a classroom of students. I can be with each teacher often.” Importantly, she devotes just as much time to educators in earlier grades as she does to those teaching grades three, four and five, when students are tested annually by the state.

“No two teachers are alike. We’re able to use different strategies to meet the different needs of adults. We tailor our jobs to them.”

Like her colleagues from other schools, Gonzalez’s coaching responsibilities include presenting demonstration lessons, observing teachers and debriefing their lessons with them, and engaging in grade-level data analysis, unit planning and problem-solving for students who have “gotten stuck.” The coaches also participate in meetings with all other coaches from across the district four times a year, looking together at achievement data for each school and brainstorming what they can do to support each other and address the needs of their individual schools and the teachers with whom they work.

“No two teachers are alike,” observes one of the district math coaches. “We’re able to use different strategies to meet the different needs of adults. We tailor our jobs to them.”



[5] The mathematics proficiency rates for both “all students” and “economically disadvantaged” students increased six points for both groups between 2015 and 2016 (from 40 to 46 percent for “all students” and from 27 to 33 percent for “economically disadvantaged” students). More recently, progress has slowed somewhat, with 48.8 percent of “all students” demonstrating proficiency in 2018 and 34.5 and 37.96 percent of “economically disadvantaged” students demonstrating proficiency in 2017 and 2018, respectively. See California Smarter Balanced assessment results [here](#).



2. COACHING TO ENCOURAGE “STUDENT DISCOURSE” AND HONOR DIFFERENT WAYS OF THINKING

To encourage instruction that reinforces what the math standards expect, Hawthorne’s approach to teacher development specifically emphasizes the idea of “student discourse.”^[6] Student discourse is a teaching strategy

that asks students to test different problem-solving approaches and to discuss results with peers, rather than having a teacher provide direct, step-by-step instruction on a sole method to use. The strategy has two goals, according to Hawthorne’s

DIFFERENT PATHS TO ONE ANSWER

What does cognitively guided instruction look like in practice? How do teachers engage students in math “discourse”?

According to Maritza Cruz-Brown, the principal of Hawthorne’s Washington Elementary School, a teacher using these approaches might put the number five on a white board and ask, “What are the different ways of making five?” and then direct students to use items they have available to them, such as red and blue buttons. One child may lay out five blue buttons in a row and say after counting them out that they total five. Another might lay out two red and three blue buttons but say, “There are two red and three blue buttons and that makes five.”

Cruz-Brown notes that older children get more sophisticated with their number talks: “In first grade, you might get $1 + 4 = 5$; a second grader might say, $7 - 2 = 5$.’ A third grader might say, $100 - 95 = 5$.’ The point of number talks is to show that there are multiple paths to the answer. Also, the idea of early math is to come to an understanding of the value of numbers, to know what ‘four’ actually is and how to arrive at the number. That’s different from counting to 100 but not knowing what a number really is.”

$$\begin{array}{c}
 \boxed{1 + 4} \text{ or } \boxed{7 - 2} \\
 \text{or } \boxed{100 - 95}
 \end{array}
 = \boxed{5}$$

[6] In November 2019, [California’s EdSource profiled another school district](#) where the gap between Latino and white students has narrowed significantly—and which also emphasizes “productive struggle” by students in math. In small, rural Winship-Robbins Elementary School District, the percentage of Latino students meeting or exceeding standards on the Smarter Balanced math test more than doubled over the last five years. According to EdSource, educators there attribute the gains to “a change in the way teachers talk to their students about math... creating more opportunities for students to talk through word problems with each other and build their ability to recognize and apply math terms, rather than relying on rote memorization.”

coaches: First, to challenge students to understand the underlying concepts better and why different and sometimes multiple problem-solving approaches work and why others do not. Second, to help students build their confidence in figuring out problems on their own, using their own understanding of math, rather than simply memorizing algorithms to apply.

Stanford math education professor Jo Boaler's research about increasing student confidence in math has been a big influence on the district's strategy. Boaler argues traditional teaching approaches, especially in the early grades, contribute to the math anxiety that many kids and adults have. At a very early age, she observes, "Children learn to think of themselves as someone who has a math brain or someone who doesn't have it. So, when they struggle—and most students do—they sign off because they don't think they have the right brain. Then we put them in tracks to reinforce that opinion. And we have always rewarded people who can do math quickly. Learning needs to be opened up and different ways of thinking need to be valued, not just memorizing rules or being fast."^[7]

With support from the [Math Project](#) at the University of California-Los Angeles (UCLA) Graduate School of Education and Information Studies, Hawthorne's coaches have helped teachers use aspects of "cognitively guided instruction" (CGI) as another strategy for working with students in math.

3. THE MATH WALK

Most recently, the current group of district math coaches has been emphasizing a new way to gather information to inform their work with teachers: "the math walk." Coaches join with district and building administrators and often someone from the Math Project and spend time visiting all classrooms in a particular school where they observe math instruction. Then the team debriefs, mapping out what they saw and developing plans to improve instruction.

One coach explains the purpose of the walks is to improve instruction and student learning: The classroom visits provide an opportunity for the principal and coach to make sure they

According to Center X at UCLA's education school, this approach to teaching mathematics, which was developed at the University of Wisconsin more than 20 years ago, "uses a student's own mathematical thinking as the basis for instruction...[and] has helped teachers to map out how basic number concepts and skills develop in the early grades. CGI helps teachers understand how children's mathematical ideas develop and provides students an opportunity to build on their own thinking."^[8]

In particular, Math Project instructors worked with district coaches to help teachers in the earlier grades focus their math instruction on encouraging students to explore and test different approaches to solving math problems—with less focus on a single, rule-based way of doing mathematics. "It's helped us work with teachers to develop students' conceptual understandings," reflects one coach during the team's last meeting of the 2018–2019 school year.

"When we were first on this journey, we looked at what teachers were doing; now we look at what the students are doing," an elementary school coach adds, suggesting how teaching has evolved to underscore the importance of listening to students and basing instruction on the development of what they already know. Another elementary school coach at the session suggests, "We're asking for less teacher talking and having more student discourse."

are focusing on the same coaching practices and advice. "Before we do the walk, I talk to the principal," says the coach. "We focus on what we'll be looking for so we're on the same page when we enter the classroom. And then we're also on the same page when we debrief."

The debriefing is not focused on a single teacher and is not evaluative. Instead, team members draw conclusions across classrooms, looking for teacher practices that need more focused support. "Teachers don't always find it enjoyable," a coach acknowledges. "It's stressful for some," another chimes in. "That's just where we're at with culture change."

[7] From an interview with Jo Boaler on July 26, 2019.

[8] See "[Professional Development](#)," *UCLA Center X*, UC Regents, accessed 23 September 2019.



WASHINGTON ELEMENTARY

PROFILE:

WASHINGTON ELEMENTARY SCHOOL

“ I love math. I want that for my students too. ”

– Maritza Cruz-Brown, Principal, Washington Elementary School

Designated by the California Department of Education as a Gold Ribbon School for having demonstrated exemplary achievement, Hawthorne School District’s Washington Elementary serves nearly 600 students who reflect the demographics of the district. Seventy-two percent are Hispanic and 22 percent are African American. Filipino, Pacific Islander and Asian students constitute another 5 percent. Families whose students attend the school speak 14 languages other than English.

Erika Ayala, the school district’s director of educational services, asserts that Washington Elementary “is doing an amazing job” with math instruction for both early and later elementary grades. The leadership provided by Principal Maritza Cruz-Brown “has been very important.” And she calls Jennifer Gonzalez an exceptional coach who has “a special rapport with teachers and is constantly meeting with them so they know what is going on.”

Cruz-Brown agrees: “Jennifer is fabulous. When she does a demo lesson, she’s a natural. She lets the kids struggle. She doesn’t give them the answer right away. She has them talk to peers. She facilitates student conversation through guiding questions that have intention and purpose, ‘why’ and ‘how’ questions tied to mathematical practices. She lets them talk about the problem and try to solve it. She models ‘student talk’ to teachers.”

Both Cruz-Brown and Gonzalez believe that the coach’s primary job is to meet with staff by grade level. Gonzalez does that often, co-planning lessons and curriculum and studying each teacher’s instructional strengths and areas for growth. She consistently asks grade-level teams to reexamine the Common Core math standards to ensure that their instruction focuses on these specific expectations and supports all students in achieving these expectations.

Successful coaching of teachers in the Hawthorne School District also requires data analysis, according to Gonzalez. After the school administers benchmark assessments every four to six weeks, she and the school principals review the data and then hold meetings with grade-level teams, examining how students performed on each assessment question and probing questions that students struggled to answer.

Coaches and administrators “coach” teachers through a series of questions: “Why did this happen?” they ask. “What standard did it address, how did we teach it and how should we prepare for the next benchmark?” They go through the same process for questions that most students answered successfully, to reinforce strategies that appear to be working. During these discussions, the teams also identify students who are struggling benchmark after benchmark and discuss interventions and how they should group them in class.

A STRONG EFFORT BUT NOT A SILVER BULLET

Cruz-Brown believes the district's commitment to placing one math coach in every school is unique. As a past coach and as someone who now supervises and supports one of the district's exceptional coaches, she knows how important the district's commitment is to coaching. She does note, however, that not all teachers receive coaching positively. For example, some teachers experience anxiety when they release instructional control to students, allowing them to struggle productively to find a solution using their own techniques and knowledge.

“ I see staff taking the time to implement strategies they are learning through professional development. I really see a difference in their classrooms as a result. It is their drive and how much they are willing to prepare that really makes a difference. ”



“I would say that some teachers are more receptive to the coaching model. And some are not. Those that are willing to learn and grow professionally are going to grow,” Cruz-Brown reflects. “I see staff taking the time to implement strategies they are learning through professional development. I really see a difference in their classrooms as a result. It is their drive and how much they are willing to prepare that really makes a difference.” ■



INTERVIEWS AND PHOTOS

Quotations and descriptions about the Hawthorne School District's efforts to improve elementary school math instruction were obtained through interviews of Erika Ayala, Maritza Cruz-Brown and the elementary math coaching team and through an email exchange with Jennifer Gonzalez, all of which occurred May–June 2019. In addition, we are grateful to the Hawthorne School District for sharing the photos of students and teachers used in this report.



The [Heising-Simons Foundation](#) is a family foundation based in Los Altos and San Francisco, California. The foundation works with its partners to advance sustainable solutions in climate and clean energy, enable groundbreaking research in science, enhance the education of our youngest learners, and support human rights for all people.



[Education First](#) is a national, mission-driven strategy and policy organization with deep expertise in education improvement. Its mission is to deliver exceptional ideas, experience-based solutions and results so all students—particularly low-income students and students of color—are prepared for success in college, career and life.

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