



A Systemic Approach to Change

Highlighting One District's Approach to Transforming Mathematics Education

About Catalyzing Change

In April 2018, NCTM published *Catalyzing Change in High School Mathematics: Initiating Critical Conversations*. Developed by high school teachers, district leaders, university faculty, and mathematicians, *Catalyzing Change* identifies the vexing issues that have long plagued high school mathematics education. The focus on high school mathematics education stems from the flat high school mathematics achievement over the last 30 years as compared to the progress made at the elementary and middle school levels. The mathematical learning opportunities students have—the content, the learning experiences and the support they receive—need to be examined and changed.

NCTM Makes Key Recommendations in *Catalyzing Change*:

- Broaden the purposes of high school mathematics*
- Eliminate student and teacher tracking*
- Teach all Essential Concepts in mathematics*
- Provide engaging and empowering mathematics instruction for every student*
- Offer high school students continuous and meaningful four-year mathematics instruction*

*EUHSD is implementing these recommendations.

In 2013, the mathematics teachers and leadership at Escondido Union High School District (EUHSD) in California began a concerted effort to create mathematics experiences that use and build on the strengths of students and teachers. In particular, they began working to remedy the ways district structures and practices of teaching mathematics have underserved students, predominantly those of color.

The outcomes produced by a school system are strongly influenced by the system's design. EUHSD viewed their work as changing a complex system, rather than fixing a disconnected collection of discrete parts. Change at a systemic level is a difficult, long-term process. EUHSD's positive results are inspiring and affirm that changes outlined in National Council of Teachers of Mathematics' (NCTM) *Catalyzing Change in High School Mathematics: Initiating Critical Conversations* are achievable and impactful.

Challenge

As with many traditional educational settings, the structures and practices in EUHSD made it difficult or impossible for many students and teachers to pursue meaningful mathematics education. An overriding focus on standardized test results and credit completion, coupled with institutional beliefs about mathematics as procedures, learning as replication, and students as deficient, led to pedagogies focused primarily on algorithms and memorization.

In addition, EUHSD's mathematics program lacked the goal or intent of producing equitable opportunities. Tracking of teachers and students, below grade level course offerings, and low expectations for students of color all contributed to the production of racialized outcomes.

Opportunity

Aware of these challenges, in 2013 EUHSD district leadership recognized the need for systemic change. Rather than viewing individual teachers as the unit of change, EUHSD decided to focus on changes to the system. EUHSD believed that giving primary attention to changes in structures could fully engage teachers and students in rigorous learning, promote improved instructional practices, and result in better student experiences and outcomes.

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The district leaders began by promoting collective responsibility among teachers; then they adopted an integrated and problem-based curriculum, detracked their students and teachers, implemented a four-year “teacher curriculum” to improve instruction and shift beliefs, created structures for professional collaboration, and built a shared vision for their mathematics classrooms. The table on the back page is a timeline of some of the major changes.

Results

EUHSD’s work in mathematics is ongoing, achieving positive impacts and encountering new and persistent challenges. Preliminary results show students and teachers are more engaged and more positive about their mathematics experiences. Mathematics classes with discussion-based teaching and learning experiences are the norm. Almost all students are taking grade-level mathematics and more students are taking upper level courses. Work continues on building a mathematics program that excels in achievement, supports students in building their identity as doers of mathematics, and provides opportunity to use their mathematical knowledge and skills to understand and critique their world. Work also continues to change the orientation from one of a deficit perspective to that of strengths, especially for students of color.

Although systemic change is challenging, with the support of leadership, a shared vision, and a new culture of professionalism, this work continues to drive the progress forward.

For more information about *Catalyzing Change*, visit www.nctm.org/change or contact David Barnes at dbarnes@nctm.org. To learn more about the work being done in EUHSD contact Abi Leaf at aleaf@euhsd.org.

Timeline of Major Changes in EUHSD					
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Structuring Schools for Adult Learning	Classroom Visits with Focus on <i>Standards for Mathematical Practices</i>	Teaching Studios and Coaching	Summer Workshops, Teaching Studios, Coaching, Common Preps, and Teacher Partnership	Summer Workshops, Teaching Studios, Coaching, and Common Preps	Summer Workshops, Teaching Studios, Coaching, Common Preps, and Teacher Partnership
Curriculum as a Lever for Change	Integrated v Traditional Pathway	Curriculum Review, Adopt CPMP	Year 1 of Curriculum Roll Out, Structuring Classrooms for Thinking and Interacting	Year 2 of Curriculum Roll Out, Complex Instruction–Treating Expectations for Competence	Year 3 of Curriculum Roll Out, Complex Instruction Cont’d, and Assessment for Learning
Changing Inequitable Structures		Initiate Discussion of Tracking Structures	Pathways Committee Meets during the Year to Build New Pathways, Eliminate Tracking	Year 1–No Tracking in 9th Grade	Year 2–No Tracking in 9th or 10th Grade
New Vision and Measures				Committee Meets during the Year to Build a Vision Statement for Math Classrooms	Committee Meets to Determine New Measures of Success toward Vision