



**OAKLAND UNIFIED
SCHOOL DISTRICT**

Community Schools, Thriving Students

STEAM in OUSD—2016-2017

Science, Technology, Engineering, Arts, & Mathematics



OUSD Board of Education Community Engagement
October 24, 2016

www.ousd.org



@OUSDnews

Ritual Opening

WHY STEAM?

Georgette Yackman defines STEAM as “Science & Technology, interpreted through Engineering & the Arts all based in Mathematical elements.”

TURN TO A NEIGHBOR: Introduce & Discuss

- Why have you joined us tonight?
- What does STEAM mean to you/your children?



Outcomes for Tonight's Engagement

- Highlight how STEAM supports achievement
- Share innovative & promising practices
- Dive deeper into into programs and curriculum

WHY STEAM?

STEAM education ties all subjects to each other in an interdisciplinary way. Georgette Yackman's defines STEAM as "Science & Technology, interpreted through Engineering & the Arts all based in Mathematical elements." (www.steamedu.com)



AGENDA for Tonight's Engagement

- Ritual Opening
- Welcome & Introductions
- STEAM Overview
- Panel Discussion
- Break-out Sessions

S.T.E.A.M.

Overview &
Highlights

Science Highlights











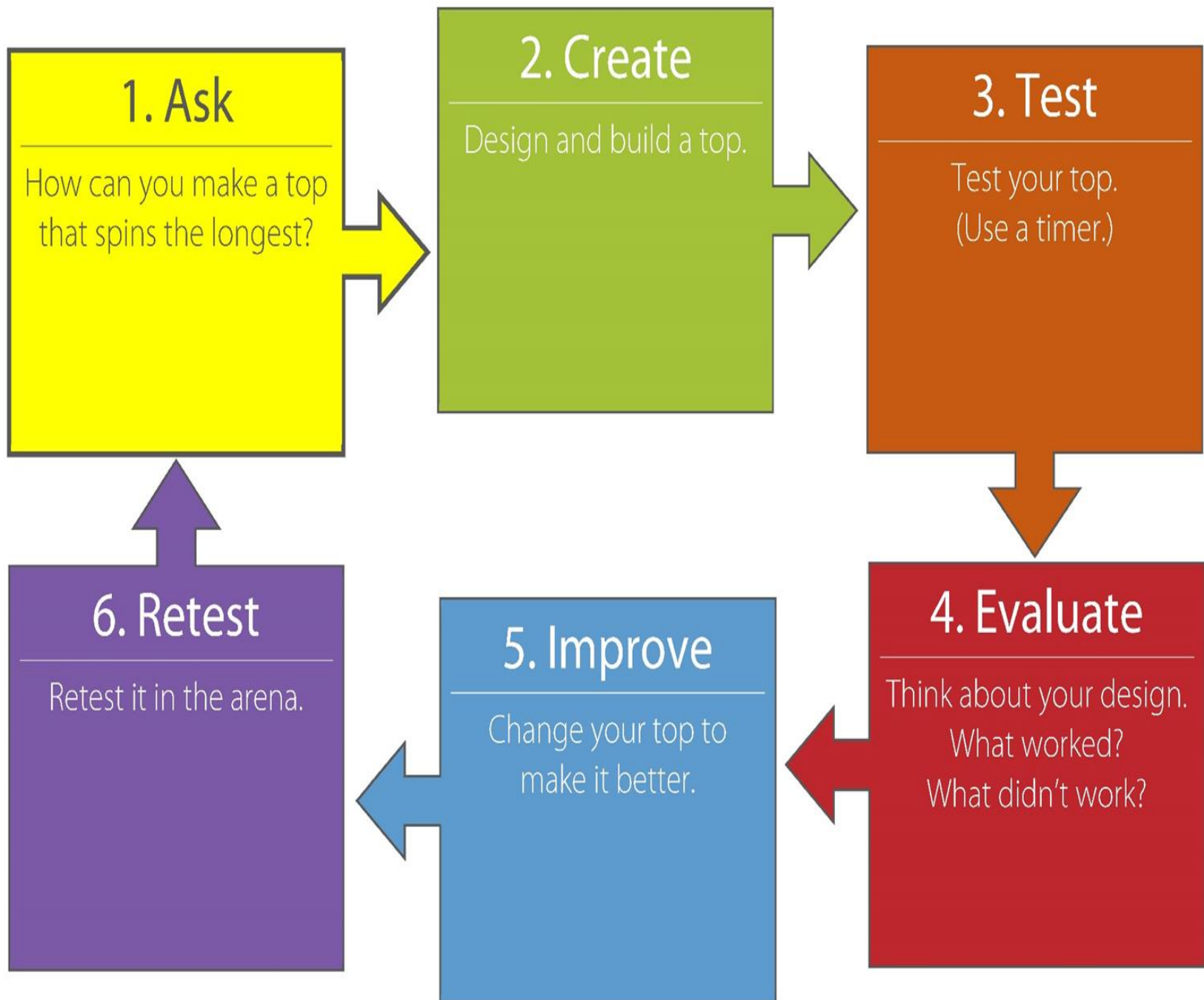
ENGINEERING EXTRAVAGANZA

Family Science Night

Tops
Legos
Catapults
Parachute
s
Boxes
Recycling

Marble Run
Earthquake
Engineering
Cars &
Ramps
Circuits

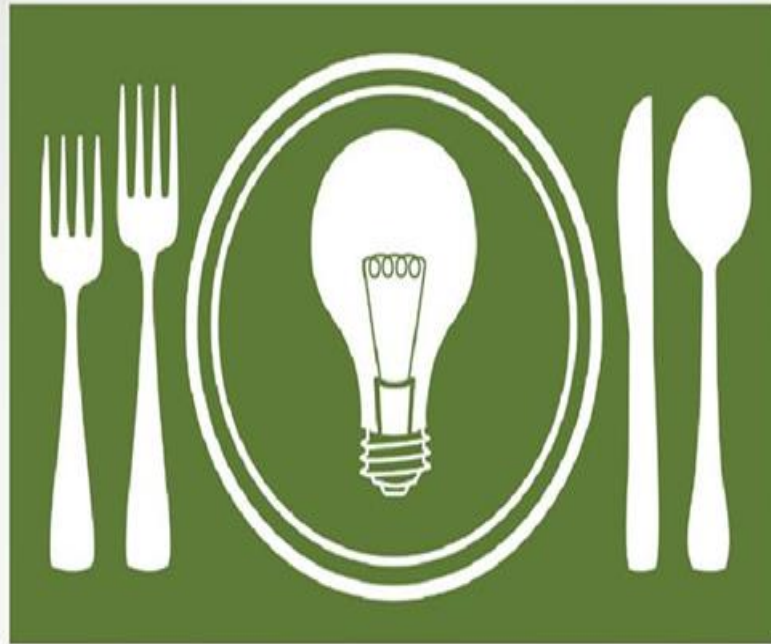




K-12 District Science Fair







DINNER with
a SCIENTIST







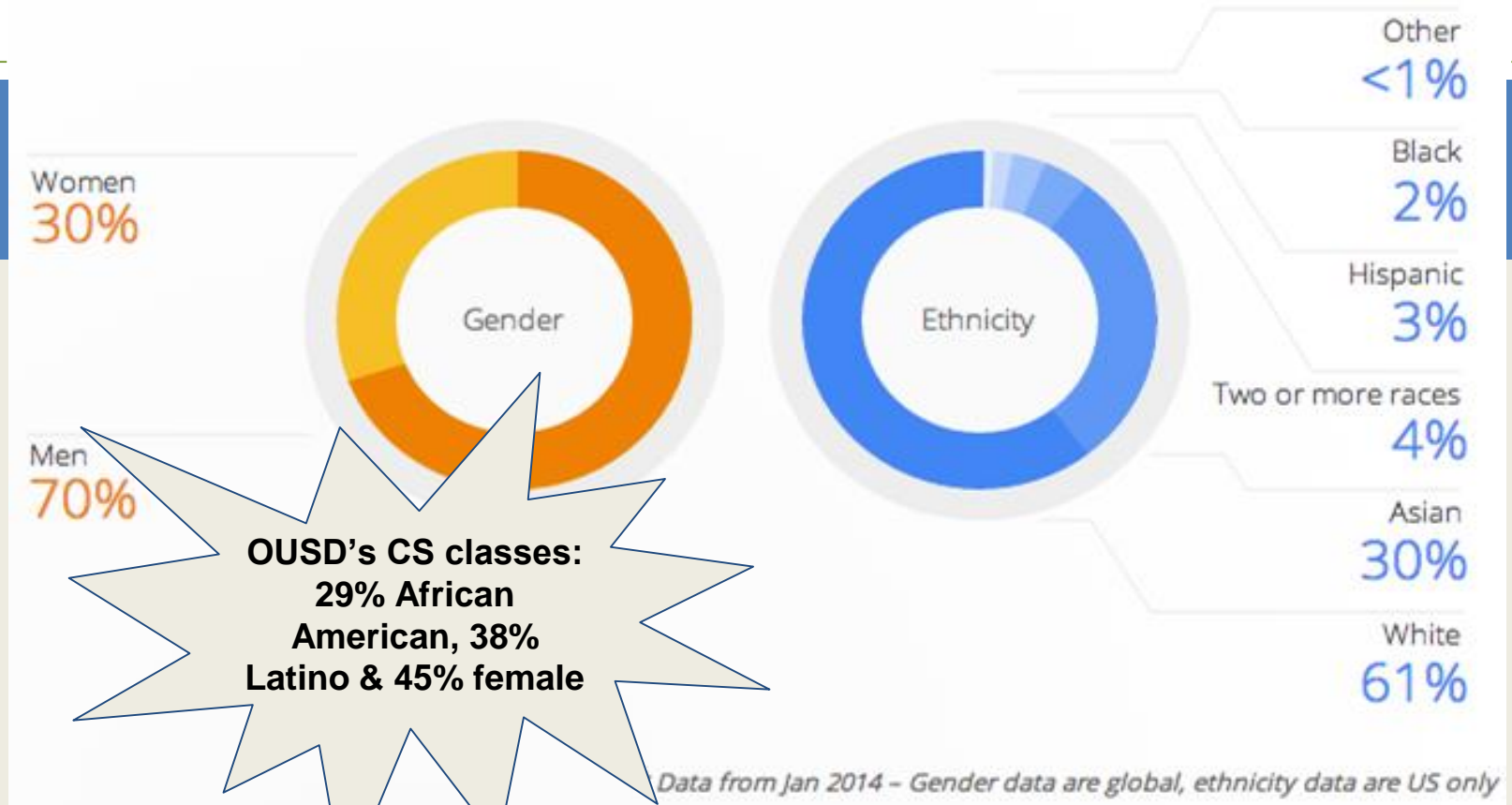
Technology Highlights

Computer Science

By 2020, the Oakland Unified School District will ensure that **all students PK-12 have access to rigorous computer science education** in the classroom and beyond.

- Access to computer science in school will include **exposure (PK-5), engaging and relevant instruction (6-8), and advanced coursework, industry-level certifications, and computer science Linked Learning pathways (9-12).**
- Through **partnerships** with tech-companies, philanthropists, non-profits and the Mayor's Office, computer science will be integrated into **after-school/extended-day programming, summer programming, and internships.**

Computer Industry Work Force in 2014

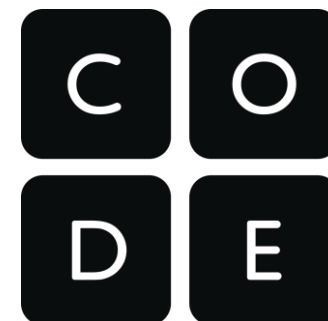
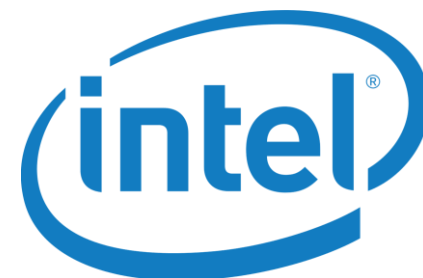


- African Americans Represent 3% of CS Majors
- Latinos represent 7% of CS Majors.



Computer Science

- Highlights for 2016-17
 - **400% increase in CS enrollment** in 6-12 (n = 2853)
 - **1686 OUSD 9th graders** taking Exploring Computer Science
 - **4x increase of middle school** students in CS classes (n = 621)
 - **11x increase in AP computer science** course enrollment (n = 361)



Linked Learning Highlights

Oakland Strategic Plan



OAKLAND UNIFIED
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Community Schools, Thriving Students

GOAL!

**100% of High School Students
Enrolled in College & Career
Pathways by 2020**

OUSD has **32** Linked Learning Pathways in **16** High Schools.
OUSD has 18 strategically-located STEM related pathways

- 4 Computer Science
- 4 Engineering
- 7 Health
- 2 Green and Environmental Science

Intel-OUSD Partnership: Summer Opportunities for Oakland Tech and McClymonds

Intel Summer Internship



29 students participated in a paid, five-week internship with Intel. Students designed products to benefit the Oakland community using Arduino boards.

GA Tech Summer Engineering Institute



6 students participated in a three-week engineering institute at Georgia Tech. Students completed rigorous projects to solve real-world engineering problems.

OUSD COLLEGE AND CAREER PATHWAYS BY INDUSTRY SECTOR 2016-2017

To learn more about these pathways, visit www.ousd.org/linkedlearning



Agriculture and Natural Resources

- Environmental Science Academy @ Oakland High *



Arts, Media & Entertainment

- Media Academy @ Fremont *
- Multimedia Academy @ Oakland International *
- Visual Arts Academy (VAAMP) @ Oakland High *
- Visual and Performing Arts Academy (VAPA) @ Skyline



Building Trades & Construction

- Architecture and Design Academy @ Fremont *



Business & Finance

- Academy of Business and Art @ Madison Park (in design)



Education, Child Development & Family

- Education and Community Health Academy @ Skyline * LL



Energy, Utilities & Environment

- Green Energy Academy @ Skyline * LL



Engineering & Design

- Engineering Pathway @ Oakland Tech
- Project Lead the Way – Engineering @ McClymonds
- Project Lead the Way – Engineering @ Oakland High
- Sustainable Urban Design Academy @ Castlemont*



Fashion & Interior Design

- Fashion, Art & Design Academy @ Oakland Tech *



Health Science & Medical Technology

- Health Academy @ Oakland Tech *
- BioTech Academy @ Oakland Tech
- Life Academy of Health & Bioscience @ Life Academy * LL
- Public Health Academy @ Oakland High *
- Health and Fitness Pathway @ Dewey Academy
- Community Health Equity Academy @ Castlemont (in design)
- Health and Technology Pathway @ Rudsdale (in design)



Hospitality, Tourism & Recreation

- Hospitality and Culinary Arts Pathway @ Ralph J. Bunche Academy



Information Technology

- Computer Science & Technology Academy @ Oakland Tech *
- Computer Science & Technology Academy @ Skyline * LL
- Computer Science Pathway @ CCPA (in design)
- Digital Arts and Applications Pathway @ Community Day (in design)



Marketing, Sales & Services

- Social Entrepreneurship Pathway @ MetWest
- Kephra Career Academy (AAMA) @ Oakland High



Public Services

- Mandela Law & Public Service Academy @ Fremont *
- Community Leadership and Service Pathway @ CCPA
- Social Justice and Reform Pathway @ Oakland High
- Public Service Pathway @ Street Academy (in design)

*: CPA (California Partnership Academy Pathway)

LL: Pathway has been Linked Learning certified through Connected California

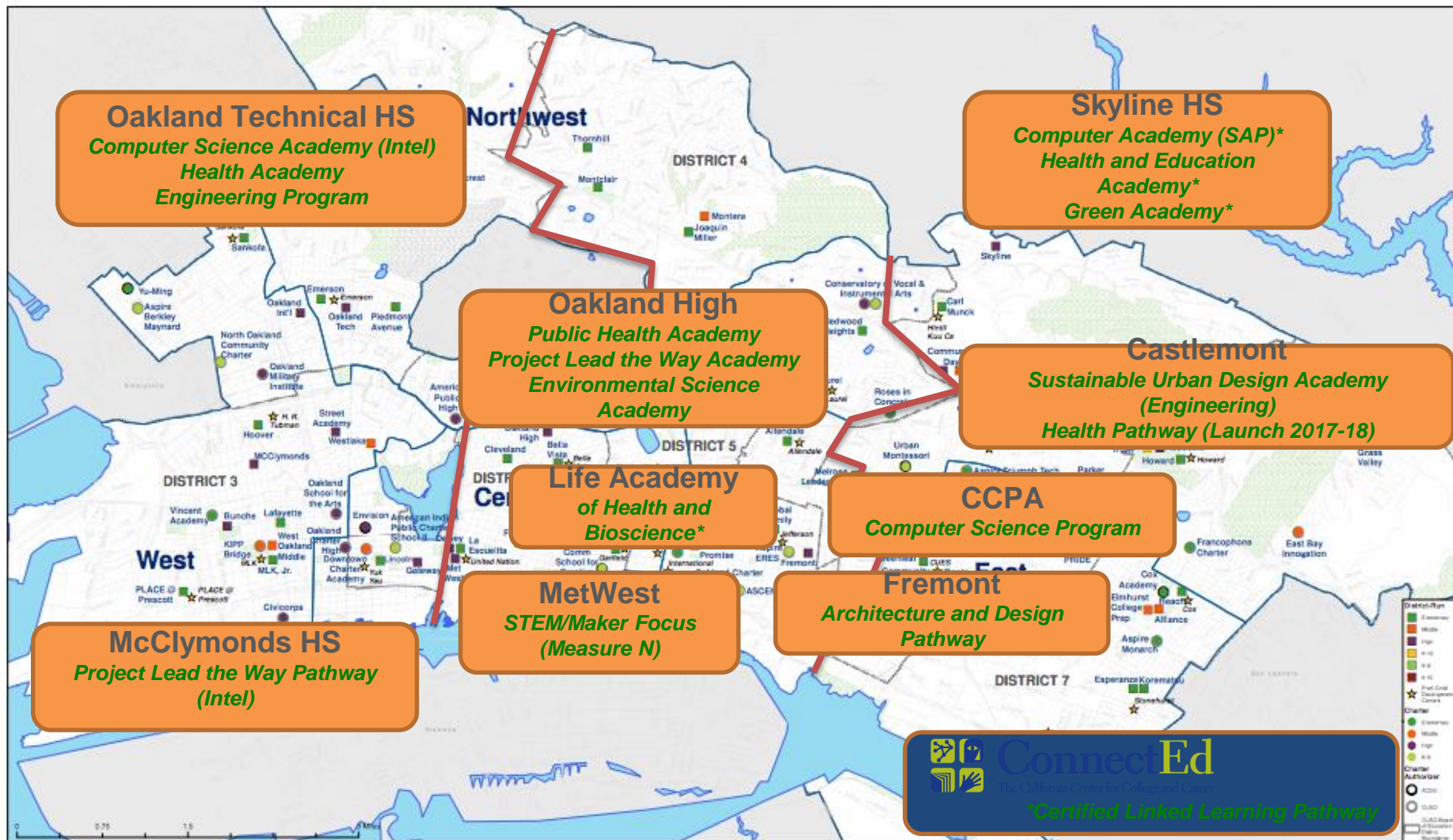
Linked Learning Office • 1000 Broadway, Suite 440, Oakland, CA 94607 • (510) 273-2360



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STEM Pathways In OUSD



PLTW Academy @ Oakland High



"It's [CS] the language of the now, We need to make sure that the scholars of color, black and brown, from Oakland can compete in the job market along with everyone else."

-Principal Abdel-qawi

Project Lead the Way Pathway added AP Computer Science

2015-16: 1 Computer Science Class (1 teacher)

2016-17: 21 Computer Science Classes (5 teachers)

Health Pathway Build Out – Atlantic Philanthropies



Summer Health Bridge 2016 Youth Conference

Breakout Sessions

EVERY STUDENT THRIVES!



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1000 Broadway, Suite 680, Oakland, CA 94607

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Contact us for additional information [optional contact area]
Phone: 510.555.5555 | Email: info@ousd.org

OUSD's Mission and Vision



Pathway to Excellence: Setting our Mission and Vision

*Oakland Unified School District (OUSD) will build a Full Service Community District focused on **high academic achievement** while serving the whole child, **eliminating inequity**, and providing each child with **excellent teachers**, every day.*

*All OUSD students will find **joy** in their academic experience while **graduating** with the **skills** to ensure they are **caring, competent, fully-informed, critical thinkers** who are **prepared for college, career, and community success**.*

How will we know we are meeting the vision in 5 years (2020)?

- 80% of high school students are in Linked Learning Pathways
- 100 % of rising sophomores are in Linked Learning Pathways
- 85% Cohort graduation rate across the city.
- 75% of graduates will meet UC/CSU's A-G criteria.
- 60% of African-American, Latino, Special Education, English Language Learner (ELL), and Foster Youth meet A-G requirements.
- 50% of LTEL's will be reclassified to fluent
- 97% of African-American males without an out of school suspension.



West Oakland STEAM

- West Oakland STEAM Corridor Schools

Hoover Elementary School

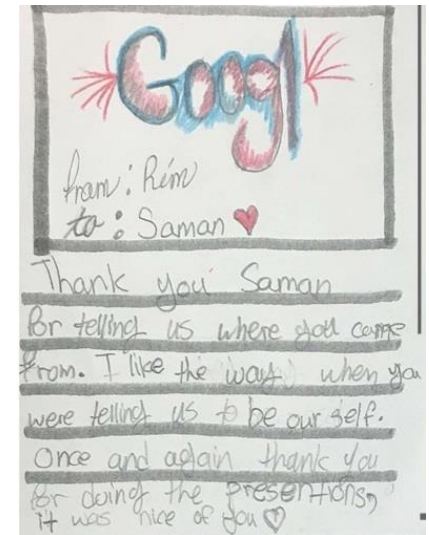
Lafayette Elementary School

Martin Luther King, Jr. Elementary School

PLACE @ Prescott Elementary School

West Oakland Middle School

McClymonds High School



- Why STEAM?

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West Oakland STEAM

STEAM Corridor Highlights from 2015-16 School Year

- Science

- Elementary schools use Full Option Science System (FOSS)
- Middle School focuses on earth, life, and physical sciences
- High School science includes biology, chemistry, physical, earth science and environmental science

- Technology

- Increased student to device ratio to 1:1 at each site
- Installed digital signs at each site to display school specific content for parents, staff, and students





West Oakland STEAM

STEAM Corridor Highlights from 2015-16 School Year

- Engineering

- Project Lead the Way (PLTW) is offered at each site as the engineering curriculum
- Weekly Community of Practice with all PLTW Teachers to facilitate dialogue, alignment, and best practices
- Funding for PLTW totals \$271,000 for 2014-16

- Art

- Partnerships with OUSD's Department of Visual and Performing Arts (VAPA) and Attitudinal Healing Connection

- Mathematics

- All West Oakland elementary schools use ST Math to supplement learning of math in a highly engaging gamified manner



Mathematics



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Meeting the Challenge of Common Core

- Network-embedded math specialists; CCSS Teacher Leaders at sites
- Multi-district partners: Math in Common®, CORE, Aspen Institute
- PD research partners: TRU-Math, Lesson Study, Teacher Residency, SERP
- Standards-aligned curriculum for TK-Algebra2; ST Math supplement
- Blueprint Fellows tutoring



HELLMAN FOUNDATION



MILLS



Berkeley
UNIVERSITY OF CALIFORNIA



BILL & MELINDA
GATES foundation



CORE
California Office to Reform Education



Mathematics

ST Math Scaled to 39 schools this year

- Research-based online content
 - at school, at home
 - language-free, highly visual; supports conceptual “schema-building”
- Strong PD support; 24/7 data reporting
- Supplement to OUSD Math Curriculum
- 5 schools with math Common Core Teacher Leaders (CCTLs)
- Partnerships support site licenses, teacher PD, implementation development, data analysis
- [La Escuelita](#) in the spotlight!



HELLMAN FOUNDATION



Mathematics



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Seizing the 12th Grade Year

- 4 years of HS math
- Partnership, course development, and dual enrollment to address college remediation crisis
- Math support for Senior Capstone project in a linked learning pathway
- AP options: CS, Calculus, Stats

