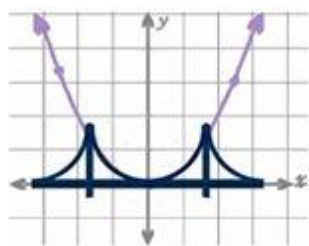


SFUSD Math Implementation Update – Supporting our Policy Makers with Early Indicators



SAN FRANCISCO UNIFIED SCHOOL DISTRICT

MATHEMATICS
DEPARTMENT

Jim Ryan, STEM Executive Director ryanj3@sfusd.edu
Lizzy Hull Barnes, Math Supervisor hullbarnese@sfusd.edu
sfusdmath.org, [@sfusdmath](#)

April 2017

Bold Math Goals

- 1. By 6/2018 we will have reduced the number of students needing to retake Algebra 1, Geometry, or Algebra 2 by 50% from numbers recorded for 6/2013. This goal will be true for the entire population of SFUSD students as well as each ethnicity. And;**
 - 2. By 6/2018 we will increase the number of students who take and pass 4th year math courses (post Algebra 2 courses) with a C or better by 10%. And;**
 - 3. By 6/2018 we will increase the number of Latino and African American students who take and pass Advanced Placement math courses by 20%.**
- 

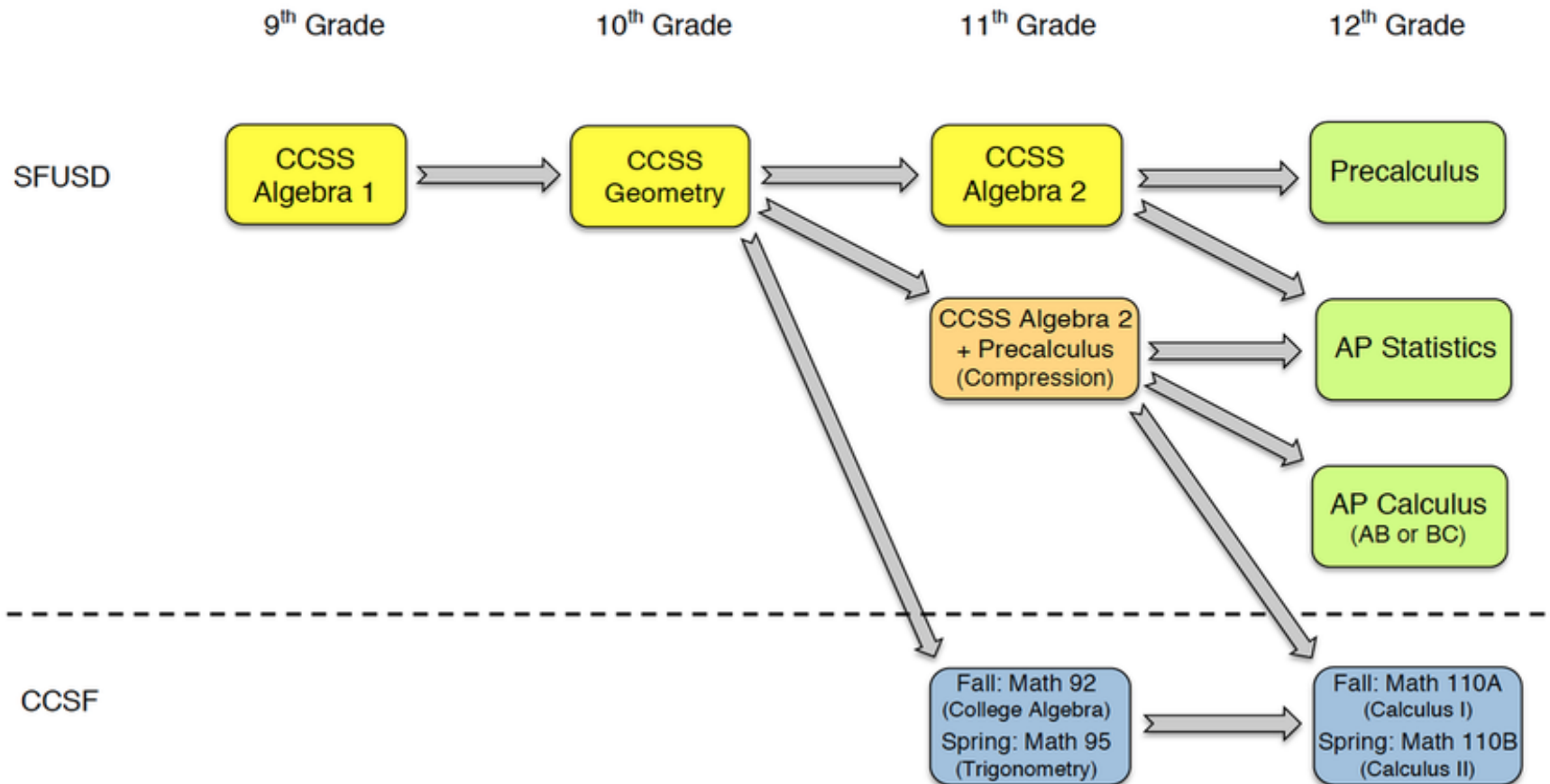
BRIEF OVERVIEW OF SFUSD MATH POLICIES

February 2014: Passage of the **Math Course Sequence Policy** that enshrines a course sequence in mathematics that benefits all learners, including students who have been historically underserved as well as those already demonstrating high performance in math and permits multiple options for reaching high-level math courses, such as AP Calculus and AP Statistics.

June 2016: Passage of the **Math Placement Policy**, that responds to a recently passed state law, SB 359. The Math Validation Test (MVT) is used to validate that students who have taken a CCSS-M aligned Algebra 1 course prior to 9th grade have the math knowledge and skills to succeed in subsequent math courses.

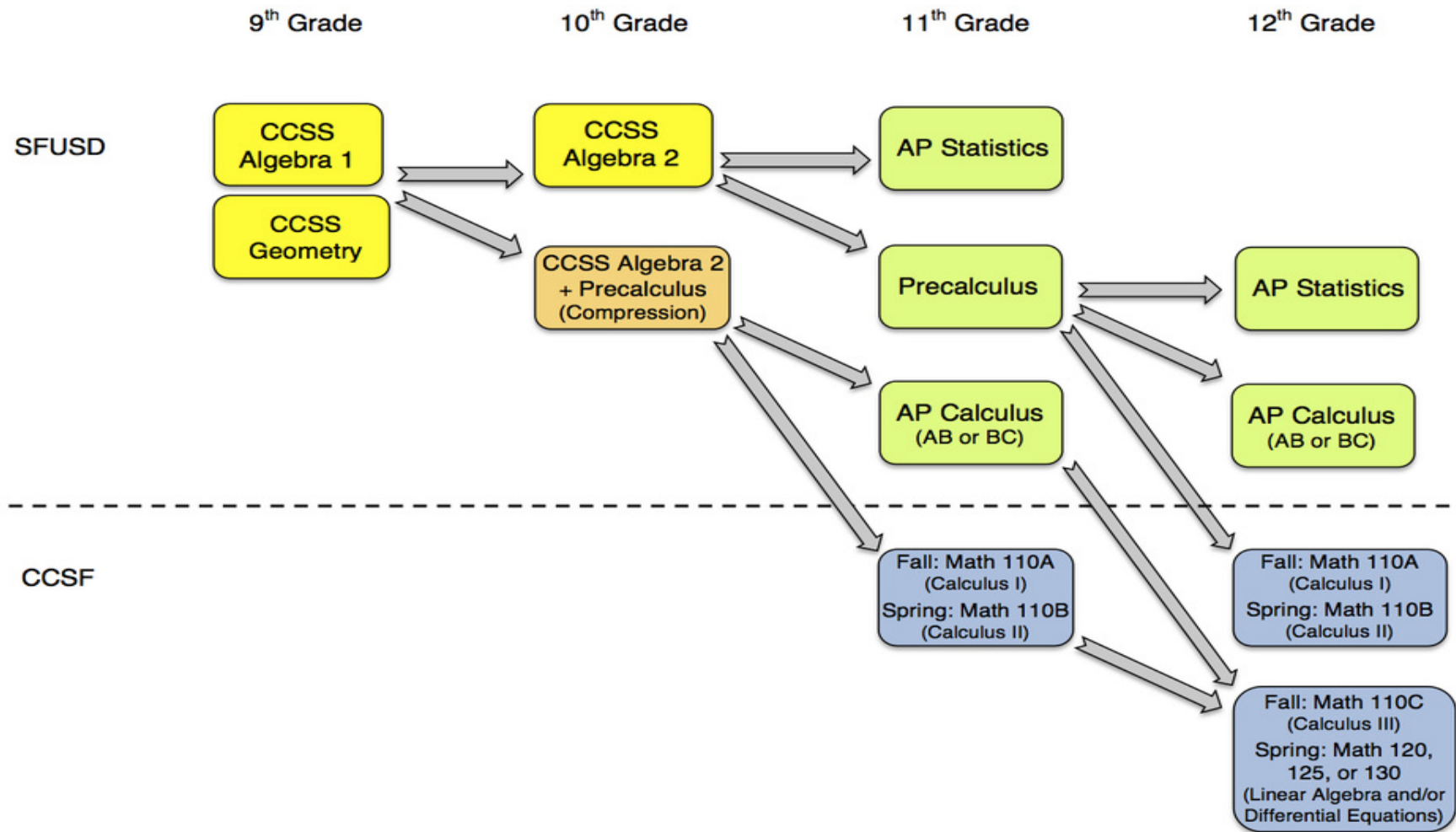
SFUSD High School Mathematics Pathways

Recommended Sequence



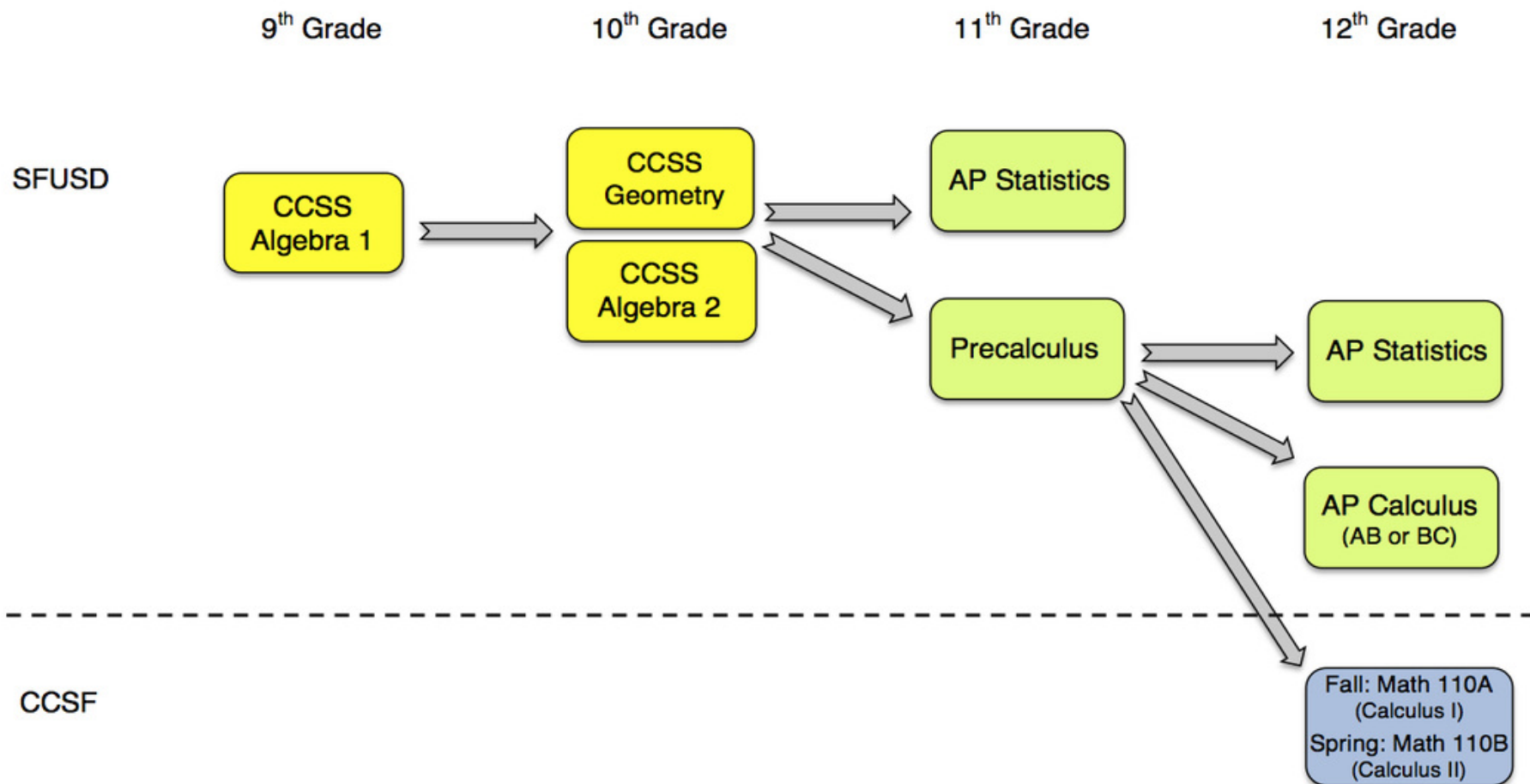
SFUSD High School Mathematics Pathways

Doubling-up as a Freshman



SFUSD High School Mathematics Pathways

Doubling-up as a Sophomore



Correlation between PSAT/SAT and SFUSD Core Curriculum

Mathematical Categories	# PSAT Qs (% of Test)	#SAT Qs (% of Test)	SFUSD Core Curriculum
Heart of Algebra •linear equation •linear inequalities in one and two variables •linear functions •linear systems •interpreting expressions/equations, connecting representations	16 (33%)	19 (33%)	CCSS Algebra 1
Problem Solving and Data Analysis •ratios/rates and proportional relationships •percentages, measurement units and conversion •two-way tables •comparing linear and exponential growth •model using linear •quadratic & exponential functions •one-variable statistics •make inferences about population •analyze appropriateness of data collection methods	16 (33%)	17 (29%)	CCSS Math 6, 7, 8 CCSS Algebra 1 CCSS Geometry CCSS Algebra 2
Passport to Advanced Math •function notation •exponential and quadratic models •create equivalent expressions involving rational exponents •add, subtract, multiply polynomial expressions •interpret nonlinear expressions •solve linear-quadratic system •rewrite an equation or expression to identify a quantity of interest •connecting representations of nonlinear relationships •rewrite simple rational expressions •understand relationship between zeros and factors of polynomials	14 (29%)	16 (29%)	CCSS Algebra 1 CCSS Algebra 2
Additional Topics in Math •Volume •trig ratios and Pythagorean Theorem •congruence and similarity •circle properties •circle in the coordinate plane •relationship between similarity •right triangles and trig ratios •operations with complex numbers •convert between degrees and radians	2 (4%)	6 (10%)	CCSS Geometry CCSS Algebra 2

Heterogeneous Course Enrollment

Prior to Course Sequence Policy (SFUSD Middle School):

- Grade 7 Math course enrollment by previous year math grades
 - Lowest 2.14 - Highest 3.22 (**difference 1.08**)
- Grade 8 Math course enrollment by previous year math grades
 - Lowest 2.36 - Highest 4.00 (**difference 1.64**)

Post Course Sequence Policy (same SFUSD Middle School)

- CCSS Grade 7 Math course enrollment by previous year math grades
 - Lowest 2.80 - Highest 3.20 (**difference 0.40**)
- Grade 8 Math course enrollment by previous year math grades
 - Lowest 2.80 - Highest 3.40 (**difference 0.60**)

Early Indicators

Algebra 1 Repeaters:

- SFUSD class of 2014: 51% of students needed to repeat
- 2015/16 CCSS Algebra 1 students: 23% of students are repeating

CCSS Grade 8 Math Grades:

- Spring 2015, Ds and Fs: 18% of students
- Spring 2016, Ds and Fs: 12.6% of students

SBAC Scores:

- Spring 2015: 49% students proficient
- Spring 2016: 50% students proficient

Note: We have not yet seen the bridging of achievement gaps



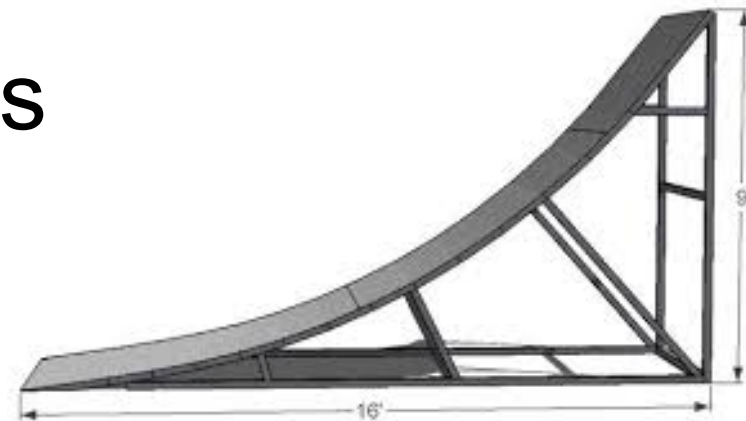
SRI's Final Report: Year 3 SFUSD STEM Learning Initiative Evaluation, *June 2016*

SFUSD:

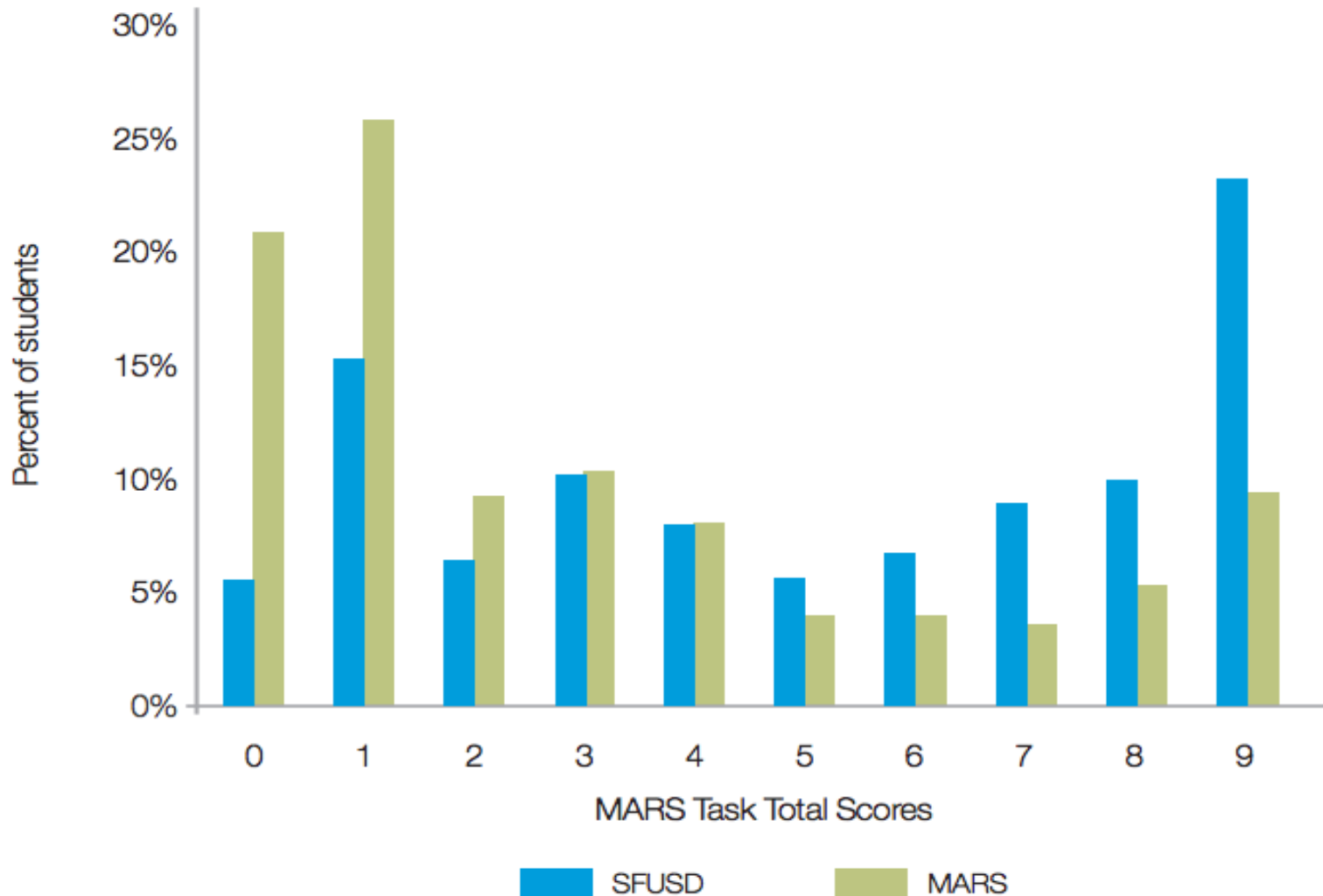
599 students, 10 schools

Comparison:

8629 students, 34 districts



SRI's Final Report: Year 3 SFUSD STEM Learning Initiative Evaluation, *June 2016*



Disaggregated MARS data from SRI Report

Ethnicity	Percent of takers	Average Score
African American	8%	3
Asian	50%	7
Latino	18%	3
Other	10%	6
White	14%	7

SFUSD Math Placement Policy and MVT

Criteria for placement in CCSS Geometry:

- Students who have taken coursework covering all of the subject matter taught in CCSS Math 8 and CCSS Algebra 1 before 9th grade; and,
- Received a grade of C or higher in their 8th grade math course; and
- Pass the SFUSD Math Validation Test (MVT).

The intent of the MVT is to *check for understanding* after a student has taken a full course of Algebra 1 outside of SFUSD, thereby improving the likelihood of success in later SFUSD math courses.



Teacher Professional Learning

For all schools, we have a balance of supporting teams of instructional leaders and also offering support to individual teachers. These two structures always work together to build the site's capacity towards sustainability with mathematics teaching and learning.



Teacher Professional Learning for Instructional Leaders

Elementary:

- Summer institute
- After school meetings based on the school's self-selected learning strand

Middle school:

- Summer institute
- Leaders meet 6 times during the year to design for the site's learning

High school

- Summer institute
- Department chairs and site reps meet 8 times during the year, with course leads joining 4 times

Teacher Professional Learning for All Teachers

Elementary:

- Supporting teams of teachers at sites to plan or teach together twice per year

Middle school:

- Collaboration days offered twice per year for every teacher
- Instructional coaching cycles offered to every teacher twice per month

High school

- Collaboration days offered twice per year for every teacher

Teacher Professional Learning 2016-17

	Elementary + K-8	Middle School	High School
Individual support sessions, including coaching	26 individual teachers 76.5 hours 18 schools	144 individual teachers 556.5 hours 21 schools	21 individual teachers 91.5 hours 6 schools
Site based support with teams of teachers	397 individual teachers 591 hours 34 schools	65 individual teachers 279 hours 21 schools	24 individual teachers 69.5 hours 6 schools
Centralized professional learning	201 individual teachers 1409.5 hours 62 schools	121 individual teachers 1947 hours 21 schools	108 individual teachers 1683 hours 20 schools

Teacher Professional Learning

quotes from SRI's JUNE 2016 "Final Report: Year 3 SFUSD STEM Learning Initiative Evaluation"

Increased Collaboration

Nearly half (47%) of teachers indicated an increase in collaboration in the classroom since they began using the Core Curriculum. They describe the ways that students work and talk together about math. While teacher reporting and observational data suggest that collaboration is indeed happening in the classrooms, there is still room to improve the depth and quality of the collaborations.

Teacher Professional Learning

quotes from SRI's JUNE 2016 "Final Report: Year 3 SFUSD STEM Learning Initiative Evaluation"

Increased Student Collaboration

"There are more students learning in a cooperative atmosphere as opposed to having to learn it on their own. They learn from each other and are able to explain a team member's thinking."

— 8th grade teacher



Teacher Professional Learning

quotes from SRI's JUNE 2016 "Final Report: Year 3 SFUSD STEM Learning Initiative Evaluation"

Student Conceptual Understanding

"There is a greater focus on concepts, rather than memorizing procedures. Students also have internalized that learning math is more about making sense than memorization."

—7th grade teacher

Teacher Professional Learning

quotes from SRI's JUNE 2016 "Final Report: Year 3 SFUSD STEM Learning Initiative Evaluation"

"[Professional development] has helped me realize that math isn't about doing worksheets and problems. Teaching math is all about facilitating experiences where students engage with rich mathematics. The Core Curriculum has also helped me realize the emotional aspect to teaching mathematics. I try to encourage students and emphasize growth mindset as much as possible."

—6th/7th/8th grade teacher



Uses of Mayor's Funds for Acceleration

Recent proposals have included

- Online Algebra courses offered by private vendors
- Summer math courses for additional acceleration options



Uses of Mayor's Funds for Acceleration

Online Algebra 1 course

In order for a student to take the MVT, if they have not taken a CCSS Algebra 1 in middle school, the student would need to take a high school Algebra 1 course that:

- Is listed on the UC Doorways as satisfying a "C" requirement.
- Is offered by an accredited institution.
- Provides a transcript that shows the equivalent of 2 semesters worth of work.

Because there are hundreds of online course vendors, and because of our commitment to our own Core Curriculum, SFUSD should not provide a stamp of approval for vendors of Algebra 1 courses.

Uses of Mayor's Funds for Acceleration

Summer Math Courses for Additional Acceleration Options

In addition to:

- Grade 11 Math Compression course (which thoughtfully combines Algebra 2 and Pre-Calculus); and,
- Doubling-up by taking two math classes either in 9th grade or 10th grade.

Additional acceleration options that are in keeping with SFUSD's Math Course Sequence policy:

- Geometry as a summer school class, taken between Grade 9 and 10.
 - Plan Ahead/Health (a Grade 9 requirement) as a summer school class, taken between Grade 8 and Grade 9.
- 

Bold Math Goals

- 1. By 6/2018 we will have reduced the number of students needing to retake Algebra 1, Geometry, or Algebra 2 by 50% from numbers recorded for 6/2013. This goal will be true for the entire population of SFUSD students as well as each ethnicity. And;**
 - 2. By 6/2018 we will increase the number of students who take and pass 4th year math courses (post Algebra 2 courses) with a C or better by 10%. And;**
 - 3. By 6/2018 we will increase the number of Latino and African American students who take and pass Advanced Placement math courses by 20%.**
- 