



NGSS Board  
Presentation  
3.09.2023



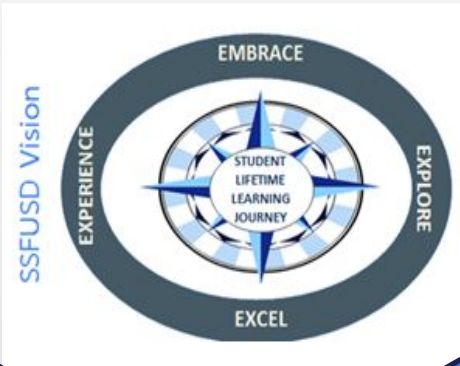


# District Goals

## LCAP GOAL 1

### Academic Achievement

The district will provide a high quality curricular program for students that will raise student proficiency on the California Common Core State Standards as measured by overall academic achievement on state assessments, CA Dashboard results, interim assessment data and ELPAC/Reclassification data.



## LCAP GOAL 4

### Special Education

The district will provide high quality curricular programs for students with IEPs that will raise student engagement in school and proficiency on the California Common Core State Standards as measured by overall academic achievement on state assessments, and engagement rates.

## LCAP GOAL 2

### Professional Development

Identified classified staff, certificated and administrative staff will participate in professional development to create capacity and expertise in curriculum program implementation based on the development of scope and sequence as measured by walkthrough observations and other evidence (artifacts and student work).

## LCAP GOAL 3

### Student, Parent & Community Engagement

Improve parent school engagement through an increase in participation in site and district parent groups such as SSC, PTSA, DELAC, ELAC, AAPAC as well as in other parent meetings as measured by attendance sign in sheets.

# District Priorities

A) Improve Curriculum, Instruction & Assessment

B) Bolster Professional Learning and Collaboration

C) Strengthen Leadership Capacity

SSFUSD

# STRENGTHENING OUR SYSTEMS

*the*  
**GAS TANK**  
**BENCHMARKS**  
checking student progress toward goals.

HOW CAN WE LEVERAGE DATA?

*the*  
**STEERING WHEEL**  
**INSTRUCTION**  
guiding our learning objectives  
ENGAGES US + TAKES US FORWARD

*the*  
**GPS**  
**NAVIGATION**  
our goals  
LCAP, DEPT., SITE, TEAM, TCHR.

**FFME -**  
A PROCESS TO DETERMINE WHAT TOOL, PRACTICE, OR SERVICE WILL HELP US SOLVE OUR IDENTIFIED NEED

WHAT IS OUR ACTION PLAN?

HOW DO WE REFLECT + RELENTLESSLY FOLLOW UP?

*the*  
**SEATS**  
**CURRICULUM**  
defines the skills to be taught  
STANDARDS, RIGOR, RELEVANCE



*the*  
**ENGINE**  
**PERFORMANCE MANAGEMENT MEETINGS**  
showcasing data + progress of  
ILTs, PLCs, DEPT. MEETINGS

Experience  
Explore  
Embrace  
Excel

*the*  
**WHEELS**  
**SYSTEMS OF ASSESSMENT**  
sets the pace

WHAT QUESTIONS HELP US DETERMINE ROOT CAUSES OF PERFORMANCE?

# EQUITY

*the*  
**MIRRORS**  
**PROFESSIONAL LEARNING SYSTEM**  
reflecting + growing in our professional practices



# Welcome and Introductions

- ✘ Jason Brockmeyer, Director of Innovation, Community Outreach and Special Projects
- ✘ Dr. Liz Beans, Teacher on Special Assignment, Biotechnology and High School Science
- ✘ Veronica Vasquez, Teacher on Special Assignment, Middle School Science
- ✘ Jennifer Rosse, Teacher on Special Assignment, Elementary School
- ✘ Ragnar Von Schiber, Associate Director, Corporate and Employee Giving



# Agenda

- ✘ Review SSFUSD NGSS Vision and Discuss “WHY” Science is Essential
- ✘ Review Current CAST Learning Results
- ✘ Review Current NGSS Adoption and Implementation Status
- ✘ Provide Futurlab Update



# SSFUSD NGSS Vision and Goals



# SSFUSD NGSS Vision

**South San Francisco Unified School District (SSFUSD) prioritizes high-quality science learning and fosters a district culture and expectation that all students can and will be successful in science.** Teachers provide successful, vertically-aligned (TK-12), rigorous and relevant three-dimensional science learning experiences that foster curiosity, persistence, and innovative thinking all anchored in the Next Generation Science Standards (NGSS). Science learning experiences promote students' sense of belonging to both the scientific community and their community in SSF through active communication and collaboration. Upon graduating from SSFUSD, all students will be scientifically literate and will be equipped with the necessary abilities and knowledge to adapt to and positively impact an ever-changing world. **SSFUSD will be recognized as a destination for high quality science education.**



# NGSS Implementation Plan Overarching Goals

## ***Students***

1. All TK-12 SSFUSD students are consistently immersed in a 3-dimensional learning environment in which all students are actively engaging in successful, high-quality NGSS-aligned science instruction that will develop all their proficiency in identified NGSS Performance Expectations.

## ***Teachers and District***

2. SSFUSD will foster a learning culture in which all teachers feel supported, and students learning experiences promote a positive outlook toward the field, themselves, their peers, and their community.
3. SSFUSD will support all teachers to increasingly implement research-based best practices for NGSS aligned planning and instruction, instructional practices and instructional design.
4. SSFUSD will create structures and systems to support attaining SSFUSD's vision of high-quality science learning.

## ***Community***

5. Stakeholders and external audiences will look to our district as a model for TK-12 science education and seek to establish partnerships with SSFUSD to further enhance SSFUSD's science program.



# Equity and Access

*The vision of the CA NGSS is “**all standards, all students**” science and engineering education should be designed and taught in such a manner that every student, regardless of background or learning characteristics, has access to and benefits from deep and engaging science and engineering learning opportunities ... and an **essential part of implementation is ensuring that all K-12 students are receiving adequate science instruction...** Therefore, **allocating adequate instructional time specifically for science** and highlighting its importance to schools and the greater community is vitally important for districts.*

*(CA Dept. Ed, 2018)*



# Science as a Lever for English Learner Equity

Students are experiencing what research indicates: that, done right, science education has enormous potential to advance language development for English learners (ELs). Scientific literacy unlocks skills across the learning spectrum and can be a powerful lever for education equity, not to mention a gateway to economic mobility.

**Research points to the potential of science to increase students' academic performance in reading, writing, and science simultaneously.** In part, this is the result of weaving together language development skills with engaging science content.

*(Educational Trust West, 2017)*



# NGSS Shifts

## How will science education change with the NGSS?

### Science education will involve less:

1. Learning of ideas disconnected from questions about phenomena
2. Teachers providing information to the whole class
3. Teachers posing questions with only one right answer
4. Student reading textbooks and answering questions at the end of each chapter
5. Worksheets
6. Oversimplification of activities for students who are perceived to be “less able” to do science and engineering

### Science education will involve more:

1. Systems thinking and modeling to explain phenomena and to give a context for the ideas to be learned
2. Students conducting investigations, solving problems, and engaging in discussions with teacher guidance
3. Students discussing open-ended questions that focus on the strength of the evidence used to generate claims
4. Students reading multiple sources and developing summaries of information
5. Student writing of journals, reports, posters, and media presentations that offer explanations and arguments
6. Provision of supports so that *all* students can engage in sophisticated science and engineering practices










The numbered information above is from: National Research Council. (2015). *Guide to Implementing the Next Generation Science Standards*. Committee on Guidance on Implementing the Next Generation Science Standards. Board on Science Education, Division of Behavioral and Social Sciences and Education, Washington, DC: The National Academies Press.



# Science Learning Data



# 2021-2022 CAST Results

Elementary School	Met or Exceeded	Middle School	Met or Exceeded	High School	Met or Exceeded								
Buri Buri	28%	Alta Loma	26%	Baden	4%								
Junipero Serra	23%	Parkway Heights	12%	El Camino	38%								
Los Cerritos	25%	Westborough	45%	South San Francisco	25%								
Ponderosa	41%	<table border="1"> <thead> <tr> <th colspan="2">KEY</th> </tr> </thead> <tbody> <tr> <td>0% to 49%</td> <td></td> </tr> <tr> <td>50% to 79%</td> <td></td> </tr> <tr> <td>80% - 100%</td> <td></td> </tr> </tbody> </table>				KEY		0% to 49%		50% to 79%		80% - 100%	
KEY													
0% to 49%													
50% to 79%													
80% - 100%													
Martin	22%												
Monte Verde	63%												
Skyline	52%												
Spruce	18%												
Sunshine	23%												



# CAST 5th and 8th Grade Comparison

District	ELLs%	FRL%	5th Met or Exceeded	8th Met or Exceeded
Cabrillo Unified	20.2%	39.6%	29.21%	25.91%
SSFUSD	22.5%	34.4%	31.19%	28.05%
Jefferson Elementary	34.2%	49.2%	24.5%	28.9%
Redwood City	39.5%	50.3%	27.78%	31.82%
SFUSD	26.3%	52.2%	38.1%	37.13%
San Mateo Foster City	30.1%	28.4%	48.65%	43.67%
Millbrae	20%	25%	49.4%	51.19%



# High School CAST Comparison

District	Pathway	% ELLs	%FRL	Met or Exceeded
<b>SSFUSD</b>	3-course model, ES, not D-level	22.5% (10.9% in 9-12)	34.4% (30.2% in 9-12)	<b>30.8%</b>
<b>Jefferson Union</b>	3-course model, no ES	14.5%	27.2%	<b>37.61%</b>
<b>Cabrillo Unified</b>	4-course model, ES D-level	20.2% (7.6% in 9-12)	39.6% (35.7% in 9-12)	<b>39.45%</b>
<b>SFUSD</b>	3-course model, no ES	26.3%	50.4%	<b>42.05%</b>
<b>Sequoia Union</b>	3-course model, no ES	15.7%	29.9%	<b>47.88%</b>
<b>San Mateo Union</b>	3-course model, no ES	10.8%	23.2%	<b>50.80%</b>



# Unified School District Comparison

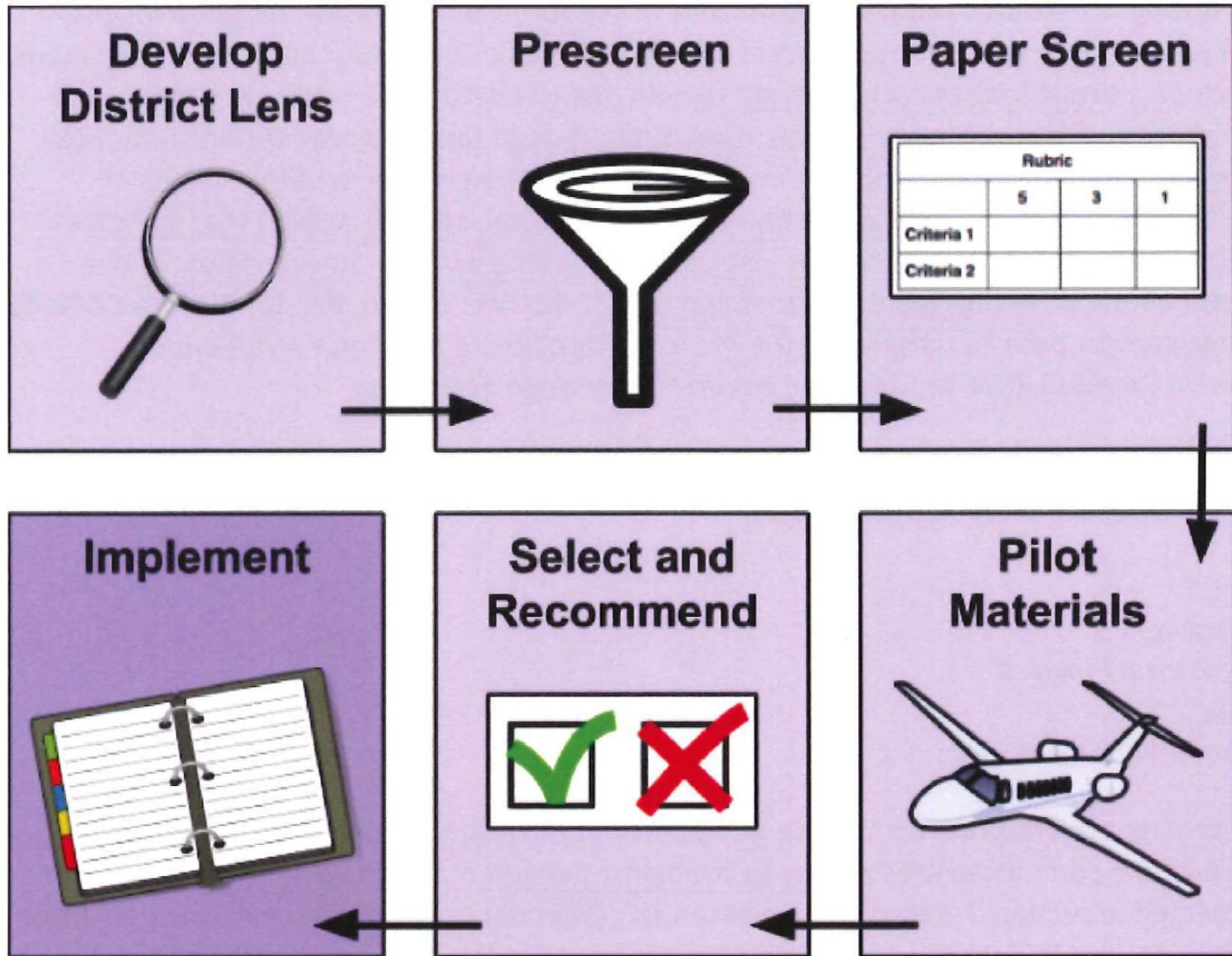
District	5th Met or Exceeded	8th Met or Exceeded	11th Met or Exceeded
San Lorenzo	17.43	19.17	28.4%
SSFUSD	31.19%	28.05%	30.8%
Cabrillo	29.21	25.91	39.45
SFUSD	38.10	29.92	42.05



NGSS K-12  
Curricula  
Adoption and  
Implementation



# Curriculum Adoption Process





# High School Adoption Update

## High School Science Goals

- ✗ Ensure all students successfully engage with rigorous, NGSS-aligned science learning through adopting and implementing new science curriculum

## Successes

- ✗ Prescreened and paper screened **9** curricula and piloted **4** curricula
- ✗ **100%** of high school science teachers have participated in at least 1 curriculum pilot
- ✗ **5** teachers participated in the field test for OpenSciEd
- ✗ Deeper learning about NGSS through evaluating and piloting curriculum

## Challenges

- ✗ Time for teachers to collaboratively plan how to teach new materials and analyze the results
- ✗ Pilot fatigue, most teachers have piloted 1-2 new units each year since 2020

## Next Steps

- ✗ Analyze data from all curriculum pilots
- ✗ Decide to adopt or continue to pilot new materials
- ✗ Finish OpenSciEd field test
- ✗ Determine the best NGSS-aligned course offerings and pathway





# Middle School Adoption Update



## Middle School Science Goals

- ✗ To wrap up the piloting process and select a curriculum to recommend for adoption
- ✗ To select a curriculum that meets our identified district goals and supports teachers in providing NGSS-aligned instruction

## Successes

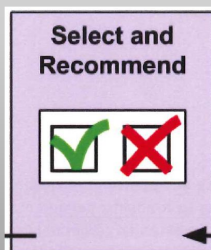
- ✗ Teacher dedication and commitment to the piloting process and selecting high quality curriculum
- ✗ 4 curricula piloted by members of the TLT over the last 4 years - Green Ninja (2019), Impact (2020), SCALE (2021), Twig Science (2022), revisiting Green Ninja (2023)
- ✗ Over 12 MS Science teachers have participated in the piloting process

## Challenges

- ✗ Piloting fatigue, teachers have been piloting a new curriculum each semester since 2019
- ✗ Settling on one curriculum that provides sufficient teacher and student support

## Next Steps

- ✗ TLT to make a decision around the 2 curricula piloted this year and whether to recommend either for board adoption by April 2023
- ✗ Develop implementation plan to support all teachers, and by extension, all students in receiving high quality science instruction





# Elementary Adoption & Implementation

## Summary of Adoption and Implementation Process

### Curriculum Selection (2020)

Used the Elementary Science TLT created District Lens

Screened several curricula, deep look at Twig, Amplify and StemScopes

ES TLT chose to pilot Amplify and Twig

### Curriculum Pilot & Adoption

Fall 2021 - Amplify  
Winter 2022 - Twig

- 32 Teachers Piloted  
- Across all grade levels & sites  
- 92% voted to adopt Twig

Board approved the formal adoption of Twig Science for Elementary in Spring 2022

### Implementation

-2022-2023 Teacher Opt In Implementation

- 104 classes/Teachers opted to implement in 22-23

-2023-2024 All Teachers will implement at least one Module

- 54 new classes/Teachers to implement in 2023-2024
- 100% of students to get Science

Supports implemented this year for implementation and to be continued into next

- 5 Year Implementation Plan Created and Shared
- Professional Development for Teachers by Twig
- Support collaboration time for teacher planning
- Support from TOSA with materials management, prep, demo lessons, collaborative planning, etc.



# Elementary Implementation

## Elementary Science Goals

- ✗ Ensure 100% of students engage in consistent science learning
- ✗ Establish environments and learning experiences in which students enjoy learning science and build a positive science self-identity

## Successes

- ✗ 104 classes/teachers opted in for implementation this year
- ✗ Approximately 1500 elementary students engaging in NGSS this year!
- ✗ Established Science Site Leads at 7 of our 9 elementary schools
- ✗ 110 elementary teachers attended at least one of our Twig Science professional learning offerings this year! That's about  $\frac{2}{3}$  of our teachers!

## Challenges

- ✗ Materials
- ✗ Competing priorities
- ✗ Little to no time to provide meaningful professional learning (PL) and support

## Next Steps

- ✗ Recommended Elementary Instructional Minutes
- ✗ Collaborate with ELD to build supports for integrating science into DELD
- ✗ Continue to provide implementation support
- ✗ Continue to explore how to provide time for meaningful PL and support



2nd Grade Class



5th Grade Class



# Futurelab Update



# Futurelab Overview

Results to Date Include

**\$32.5M** investment, **65,000** volunteer hours reaching **8K** students a year.



**EXCITE**

**GENE ACADEMY**  
Elementary School

Homework help  
Science activities



**ENGAGE**

**HELIX CUP**  
Middle School

Team challenges  
Science skills



**EQUIP**

**SCIENCE GARAGE**  
High School

Four year biotech pathway  
Science teaching space



**EMPOWER**

**SCHOLARSHIPS**  
College

Grants for post-secondary  
STEM education

Futurelab focuses on supporting rigorous and relevant hands-on learning at for every student at every grade level in SSFUSD



# Other Futurelab Highlights



Support with providing K-12 Science and Biotechnology ToSAs



Up to \$425K a year in scholarships to support students studying STEM



Funding for K-12 science classroom equipment and materials



Field trips for all SSF biotech students and access to specialized GNE labs for 5-6 students



In kind donations of lab equipment, supplies and technology



Thank You Genentech!

