

# K-5 Science Curriculum Pilot & Adoption Process

March 26, 2020



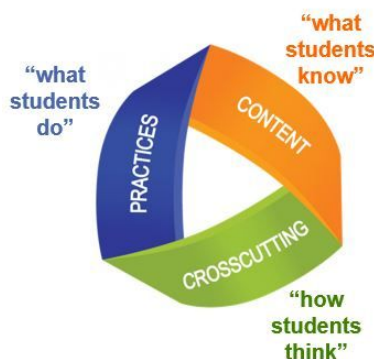
## Science Adoption Update



1. Historical background/timeline for NGSS
2. Current science curriculum in RCSD
3. Our adoption process
4. Next steps and schedule (with updates due to school closures)

## Next Generation Science Standards Timeline

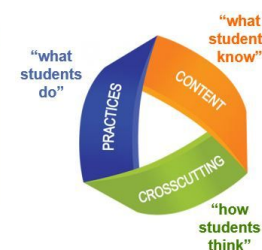
- Major shift in how science is taught and assessed
- 2013 NGSS Adopted by CA
- 2016 Curriculum Framework guides implementation
- 2018-2019 school year - state releases list of approved science materials/curricula



## Next Generation Science Standards



5-ESS1 Earth's Place in the Universe		
<p><b>5-ESS1 Earth's Place in the Universe</b></p> <p>Students who demonstrate understanding can:</p> <p><b>5-ESS1-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</b> [Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]</p> <p><b>5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</b> [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]</p> <p>The performance expectations above were developed using the following elements from the NBC document <i>A Framework for K-12 Science Education</i>:</p>		
<p><b>Science and Engineering Practices</b></p> <p><b>Analyzing and Interpreting Data</b></p> <p>Analyzing data in 3-5 builds on K-2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.</p> <ul style="list-style-type: none"> <li>Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2)</li> </ul> <p><b>Engaging in Argument from Evidence</b></p> <p>Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).</p> <ul style="list-style-type: none"> <li>Support an argument with evidence, data, or a model. (5-ESS1-1)</li> </ul>	<p><b>Disciplinary Core Ideas</b></p> <p><b>ESS1.A: The Universe and its Stars</b></p> <ul style="list-style-type: none"> <li>The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)</li> </ul> <p><b>ESS1.B: Earth and the Solar System</b></p> <ul style="list-style-type: none"> <li>The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)</li> </ul>	<p><b>Crosscutting Concepts</b></p> <p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5-ESS1-2)</li> </ul> <p><b>Scale, Proportion, and Quantity</b></p> <ul style="list-style-type: none"> <li>Natural objects exist from the very small to the immensely large. (5-ESS1-1)</li> </ul>



## Current (Williams Audited) Adoption



CA Science 2008 by MacMillan McGraw Hill (reflects the pre-2013 standards), not NGSS aligned

Kindergarten Activity book	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade

## Transition plan to NGSS - ELA supports



- Since 2015, every classroom in Ravenswood includes 25-35 curated NGSS texts that are aligned with standards at their grade level
  - Earth Science
  - Life Science
  - Physical Science
  - Engineering

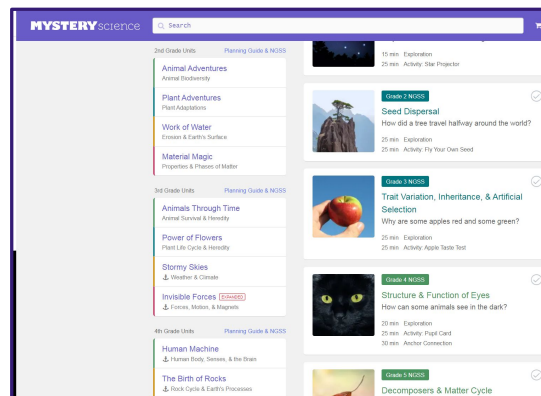


3rd Grade NGSS Titles for Anchor/Mentor Texts  
To use in reading/writing workshop

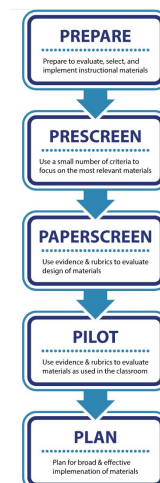
## Transition plan to NGSS Mystery Science Supplemental



- Since 2017, every teacher in Ravenswood has subscription to Mystery Science Supplemental Resources



## Curriculum Adoption Process



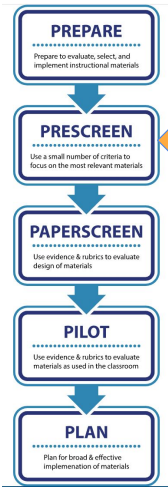
### Toolkit for Instructional Materials Evaluation (TIME)\*

NextGen TIME will:

- allow districts and educators to analyze and select materials based on key criteria and scoring guidance, and
- provide educators with a transformative professional learning experience highly focused on the NGSS and the implementation of high quality materials designed for next generation science.

\* TIME is the approved NGSS curriculum evaluation tool  
CA County Superintendents Educational Services Association (CCESA) 2019

# Curriculum Adoption Process



## Prescreen

- Science Leadership Team (STEM coordinator, 2 science lead teachers and 2 additional 5th grade teachers) used key criteria and rubric to pare number of programs to consider in Paperscreen process down from 12 to 3
- 12 Programs evaluated in prescreen:  
STEMscopes, Amplify Science, Building Blocks, FOSS, Discovery, CA HMM Dimensions, CA Inspire (McGraw-Hill), National Geographic Exploring Science, CA Elevate (Pearson), TCI: Science Alive, Twig, Mystery Science\*
- 3 Programs moved forward:

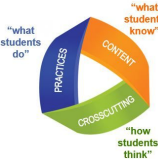
**FOSS, Amplify, Twig**

\*Mystery Science - not on adoption list



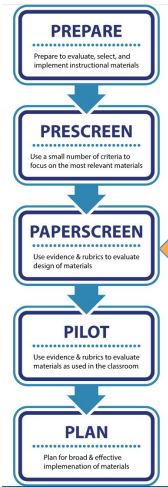
# Prescreen Tool

- Use of Phenomena/ Problems
- Logical Sequence
- Students Figuring Out
- Three-Dimensional Performance



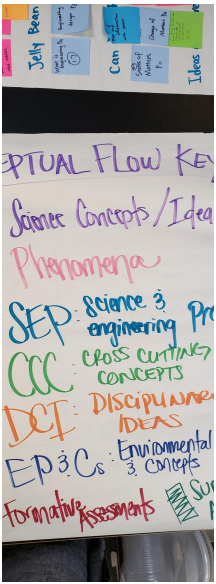
Criteria	Evidence: What was in the materials, where was it, and why is this evidence?	Shows promise
Use of Phenomena/Problems. Materials provide relevant and authentic learning contexts through which students <ul style="list-style-type: none"><li>engage as directly as possible with phenomena or problems to ask and answer their questions as well as questions from other sources and</li><li>have the potential to use the three dimensions to make sense of phenomena or design solutions to problems.*</li></ul>		
Presence of Logical Sequence. Student learning across the three dimensions is <ul style="list-style-type: none"><li>arranged in a logical sequence and</li><li>sufficient and appropriate for students to figure out the phenomena or problems.*</li></ul>		
Students Are Figuring Out. Materials position students to make sense of phenomena and design solutions to problems by <ul style="list-style-type: none"><li>asking and answering questions that link learning over time and</li><li>using the three dimensions to link prior knowledge and negotiate new understandings and abilities.*</li></ul>		
Three-Dimensional Performances. Materials include assessments designed to <ul style="list-style-type: none"><li>match the targeted learning goals and</li><li>elicit evidence of students' use of the three dimensions to make sense of phenomena and/or to design solutions to problems.*</li></ul>		

# Curriculum Adoption Process



## Paperscreen

- In the Paperscreen phase, a team of educators collaboratively collect, represent, and analyze unit-level evidence from three to five programs in order to better understand the strengths and limitations of each program and how they might work in specific contexts.
- A professional facilitator, STEM Coordinator and 8 Ravenswood teachers dedicated a Sunday to dive in to FOSS, Amplify and Twig
  - FOSS and Twig moved forward to pilot phase



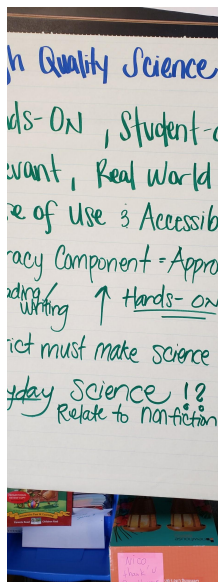
# Our Pilot Team

- All sites and grade levels represented

grade/site	Belle Haven	Brentwood	Costano	LRRMA	Willow Oaks
TK/K			2 teachers	1 teacher	
1		2 teachers			
2					2 teachers
3			1 teacher		
4	2 teachers				
5	1 teacher		1 teacher	1 teacher	1 teacher







## Pilot curriculum plan

grade	Teachers/Site	Pilot 1 - EARTH SCIENCE Jan 13 - Feb 27  Training: Jan 8 1:30-4:30	Pilot 2 - PHYSICAL SCIENCE March 9 - May 7  Training: March 4 1:30-4:30
TK/K	3 teachers/ Costano&LR	TWIG Be Prepared (26 lessons/16 Fast Track)	FOSS Materials and Motion (22 lessons)
1	2 teachers/Brentwood	FOSS Air and Weather (16 lessons)	TWIG Shadows Town (35 lessons/16 Fast Track)
2	2 teachers / Willow	TWIG Save the Island (28 lessons/18 Fast Track)	FOSS Solids and Liquid (19 lessons)
3	1 teacher /Costano	FOSS Water and Climate (20 lessons)	TWIG Playground Forces (37 lessons/22 Fast Track)
4	2 teachers Belle Haven	TWIG Time Traveling Tour Guides (18 lessons/ 12 Fast Track)	FOSS Energy (17 lessons)
5	4 Teachers / multiple sites	FOSS Earth and Sun (19 lessons)	TWIG Matter Mystery Hotline (35 lessons/19 Fast Track)

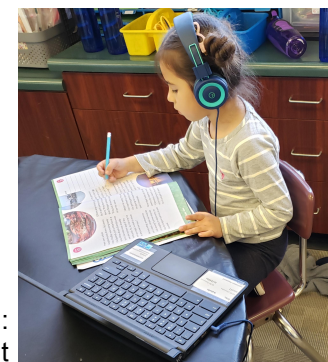
**MOVED  
to next  
Spring**

## Twig Pilot



Kindergartener picks out weather based on story  
"Be Prepared" - Weather/Earth Science Unit

**twig**  
Science



2nd Grader finds evidence for a claim about erosion:  
"Save the Island" - Earth Science Unit

## FOSS Pilot

1st Graders test parachutes  
"Air and Weather" - Earth Science Unit

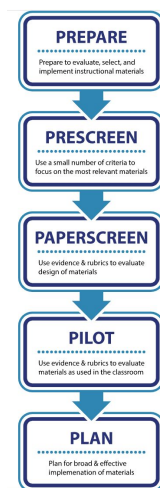


**FULL OPTION  
SCIENCE SYSTEM™**

5th Graders trace shadows:  
"Earth and Sun" - Earth Science Unit



## Curriculum Adoption Timeline

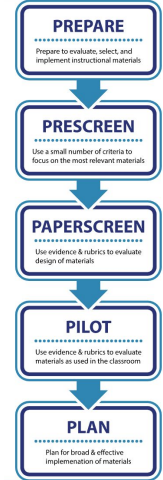


- Jan 8, 1:30-4:30: Training on first pilot (2-3 hrs; FOSS or Twig depending on Grade Level)
- Jan 13- Feb 27 - Pilot #1 (teach science with the pilot curriculum instead of Mystery Science for about 5 weeks in this window)
- March 3 - Debrief first pilot curriculum
- March 4 - training on second program (2-3 hrs)
- March 9 - May 6: Pilot #2 (teach science with the pilot curriculum instead of Mystery Science for about 5 weeks in this window)
- May 6: After school committee meeting to pick program (2-3 hrs)
- May 28: Present selected recommendation to the school board



# Curriculum Adoption Timeline - POST COVID

SECOND PILOT - possible "plan b"



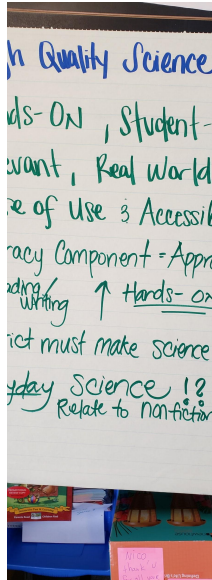
- September 2020 - REFRESHER curriculum trainings
- Fall 2020 - 8 week Pilot of curriculum #2
- November, before Thanksgiving break: After school committee meeting to pick program (2-3 hrs)
- Early December: Present selected recommendation to the school board

THINGS To consider:

Williams Audits for next year?

Off of curriculum map, with units that are at sites now

Can we keep same team together? Will all teachers stay at current grade level? We will have some teachers at GL piloting and some not at the same site



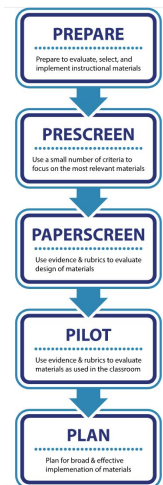
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**MOVED to next Spring**

# Curriculum Adoption Team!



**Huge THANK YOU to:**

**Science Lead Teachers: Lauren Traube and Sara Carr**

**Science Pilot Teachers:**

**Sal Germano, Nicole Dekker, Ruth Cuellar, Jenn Brito, Natalia Loken, Lauren Traube, Alina Zhang, John Dellamano, Stuart Shiraishi, Julie Souza, Dixie Johansen, Sara Carr, Jessica Cox, Tiffany Ishihara-Paraso**

