SACRAMENTO CITY UNIFIED SCHOOL DISTRICT
BOARD OF EDUCATION

Agenda Item# 9.1

Meeting Date: March 5, 2020

Subject: Approve Grades 6 – 12 Science Instructional Materials Adoption

- ☐ Information Item Only
- ☐ Approval on Consent Agenda
- ☐ Conference (for discussion only)
- ☐ Conference/First Reading (Action Anticipated: _____)
- ☐ Conference/Action
- ☒ Action
- ☐ Public Hearing

Division: Academic Office, Curriculum and Instruction

Recommendation: Approve recommendations to adopt science instructional materials/textbooks for grades 6-12. The materials recommended include:

- Grades 6-8th: Amplify Science (Amplify Education)
- Grades 9-12th: Various Titles (STEMScopes and Pearson)
    - HS Biology/Earth Science: The Living Earth (STEMScopes)
    - HS Chemistry/ Earth Science: Experience Chemistry (Pearson)
    - HS Physics/Earth Science: Physics in the Universe (STEMScopes)

Background/Rationale: In the spring of 2019, an Instructional Materials Committee was convened to review and recommend Science textbooks/instructional materials for Board approval. The pilot and review of instructional materials concluded in February 2020. Teachers serving on this committee were selected based on their expertise with student populations represented within the district, including English Learners, Special Needs, GATE, and underperforming students. The teachers carefully analyzed these programs for science content, skills and thematic alignment and standards, instructional programs, universal access, and assessments. The textbooks were on display for eight weeks at the district office and were also available online for public viewing and input. After an in-depth review of the programs the Instructional Committee is recommending the aforementioned materials for adoption and Board approval.

Financial Considerations: The budget that supports the adoption of 6-12 instructional materials for Science is $6,000,000. The source of funding is the Local Control Funding Formula (LCFF).

LCAP Goal(s): College, Career, and Life-Ready Graduate

Documents Attached:

1. Executive Summary
2. CA NGSS TIME (Toolkit for Instructional Materials Evaluation) Overview
3. Science curriculum materials preview announcement

Estimated Time of Presentation:	15 minutes
Submitted by:	Christine Baeta, Chief Academic Officer Matt Turkie, Assistant Superintendent of Curriculum and Instruction and Aaron Pecho, Science Coordinator
Approved by:	Jorge A. Aguilar, Superintendent

Board of Education Executive Summary

Curriculum and Instruction

Approve 6-12 Science Instructional Materials Adoption

March 5, 2020

I. Overview/History of Department or Program

The Next Generation Science Standards (NGSS) for Science, adopted by the state board of education in 2013, highlight critical skills (practices) and expectations in Science necessary to develop students' understanding of problems facing our world and the essential competencies to solve those problems. The standards emphasize the importance of building content knowledge through balanced engagement in scientific themes or concepts that cut across all areas of science and engineering and each of the eight scientific practices; skills that guide instructional experiences that allow students to approximate the real work of scientists and engineers. In 2016, the state board of education approved the new CA Science Framework which guides curriculum and instruction to support LEAs in implementing the new standards instructionally. Existing instructional materials, purchased to align with the previous standards, are insufficient in meeting the increased expectation and rigor of the NGSS. The district is therefore seeking approval of a singular science instructional materials series for grades 6-8 and two additional series for grades 9-12. Implementation of the materials will be effective beginning with the 2020-2021 school year.

II. Driving Governance:

The district's Guiding Principle calls for all students to be given an equal opportunity to graduate with the greatest number of postsecondary choices from the widest array of options. Undergirding this charge is the imperative to ensure that students and teachers have access to instructional materials that are aligned to the rigor, depth, and complexity of the NGSS. As a result, students will be better equipped with the competencies and dispositions that will enable them to compete in a world that is rapidly changing, technology-driven, and increasingly globally interconnected. Thus, the adoption of new instructional materials in science is essential to afford students access to the knowledge, skills, and understandings needed for their future academic and career success.

Additionally, as per Board Policy 6161.1, Instruction - Selection and Evaluation Of Instructional Materials: The Governing Board believes that instructional materials should be selected and evaluated with great care so that they will effectively support the adopted courses of study and meet current curricular goals. The review of instructional materials shall be coordinated with the overall development and evaluation of the district's curriculum. Taken as a whole, district instructional materials should present a broad spectrum of knowledge and viewpoints, reflect the ethnic and cultural diversity of our society, and enhance the use of multiple teaching strategies and technologies.

III. Budget:

The budget that supports the adoption of 6-12 instructional materials for Science is $6,000,000. The source of funding is the Local Control Funding Formula (LCFF).

IV. Goals, Objectives and Measures:

The district is fully committed to implementing a college and career ready curriculum aligned to the CA NGSS for science and ensuring that students are given equal opportunity to graduate with the greatest number of postsecondary choices from the widest array of options. The district endeavors to implement the NGSS with fidelity and provide an infrastructure of support based on research, reform initiatives, and exemplary practices. This includes high-quality standards aligned instructional materials and professional learning that is continuous and fosters a deepening of subject matter knowledge and a greater understanding of learning for improving classroom practice and student achievement. The district will use multiple measures to assess the quality and effectiveness of the implementation of the NGSS aligned instructional materials. Student achievement will be assessed using standardized measures such as the California Science Test (CAST) as well as curriculum embedded common district assessments within the materials. The fidelity of implementation of the instructional materials will be determined through evaluations of professional learning, observations of instruction in the classroom, and examination of student work. All results will be used to inform programmatic and systemic changes.

V. Major Initiatives:

SCUSD's approach to selecting instructional materials aligned to the California Next Generation Science Standards consisted of three key strategies including convening an instructional materials review committee of primarily teachers, piloting two sets of materials over eight weeks each (sixteen weeks total) in grades 6, 7-8 and 9-12 which included gathering feedback from students, and stakeholder outreach through e-connect, social media outreach and parent/community stakeholder groups, a materials display for public review and feedback, and online access to the materials through our SCUSD website.

Instructional Materials Committee

In May 2018, the district and adoption steering committee worked together to form an instructional materials adoption committee. Over the spring 2019 and summer 2019, 59 teachers spanning grades 6-12, including Special Education and Gifted and Talented Education (GATE) met to screen science curricular materials for adoption. Each grade band/content area's committee recommended 2 curricula to pilot in the 2019-2020 school year. 85 teachers spanning grades 6-12 participated in our pilot of instructional materials. The committee's work was guided by the 2018 Toolkit for NGSS Instructional Materials Evaluation (NGSS TIME)

authored and developed across the California Science Project, K12 Alliance and WestEd. The review work began with an analysis of data to develop a district lens which would be considered alongside rubrics evaluating standards' alignment. The prescreen committee convened over several days to evaluate all programs on the CA State Board of Education Adopted Programs list and additional materials as available. The committee recommended 5 programs in each grade level/ content area to move forward for a deeper screen (paper screen) that would happen over the summer. Over the course of five full days per grade level/ content area, the reviewing teachers narrowed the choices from five to two for each grade level span/content area. The following programs were identified for pilot in the fall/winter of 2020:
Grade 6: Green Ninja and Amplify Science (6)
Grade 7-8: Activate Learning/IQWST and Amplify Science (7-8)

Biology w/ Earth Science:
- Houghton Mifflin Harcourt Science Dimensions
- STEMScopes "The Living Earth

Chemistry w/ Earth:
- Houghton Mifflin Harcourt Science Dimensions
- Pearson's Experience Chemistry

Physics w/ Earth:
- Houghton Mifflin Harcourt Science Dimensions
- STEMScopes "Physics in the Universe"

Instructional Materials Pilots
Selected materials were piloted for eight weeks each across the fall and into the winter of this school year. There were 27 6th grade piloting teachers across the district in 24 elementary schools. There were 24 7-8th piloting teachers across grades in eight middle schools. There were 25 9-12 teachers across the district in eight high schools. Piloting teachers taught, evaluated, debriefed, and analyzed each set of materials across 5 rubrics and our district lens. Student work was collected and analyzed which contributed to a programs' overall score. Feedback was collected from piloting students for the committee to consider.

Instructional Materials Outreach to Stakeholders
To afford a wider range of teachers, school leaders, parents, students, and community members the opportunity to review materials, the district displayed the top two sets of instructional materials selected by the committee at the Serna Center. On-line access to instructional materials were provided through our website and began in November. A physical review of instructional materials took place over eight weeks (Jan - Feb). Stakeholders were alerted through e-connect and social media. In addition, principals and teachers were asked to forward our announcement for materials review to their parent community via email and take

home forms. Feedback was collected utilizing an electronic feedback form. Data from the feedback forms were gathered and analyzed by the instructional materials committee as an integral component of the decision making process.

VI. Results:

After an in-depth review of the science Instructional Materials, the Instructional Materials Committee recommends the following for Board adoption:

Program	Pilot Teacher Votes[1]	Student Votes	Community Feedback
6th Grade - Amplify Science 6 (Amplify Education)	10/10 (100%)	316/512 (62%)	**Amplify - 3/3 (100%)**
7/8th Grade - Amplify Science 7-8 (Amplify Education)	15/15 (100%)	1084/1477 (73%)	IQWST - 1/5 (20%) **Amplify - 2/5 (40%)** **Either - 1/5 (20%)** Neither - 1/5 (20%)
Biology w/ Earth Science: STEMScopes "The Living Earth" (Accelerate Education)	10/11 (91%)	290/393 (74%)	HMH - 2/4 (50%) **Either - 1/4 (25%)** Neither - 1/4 (25%)
Chemistry w/ Earth Science: Experience Chemistry (Pearson)	6/6 (100%)	162/180 (90%)	**Pearson - 1/5 (20%)** **Either - 2/5 (40%)** Neither - 2/5 (40%)
Physics w/ Earth Science: STEMScopes "Physics in the Universe (Accelerate Education)	8/9 (89%)	87/153 (57%)	**Either - 1/2 (50%)** Neither - 1/2 (50%)

A summary of the strengths and challenges/limitations of each program are outlined below:

[1] Pilot teacher votes include the teachers that were present or had weighed in regarding the decision at our final debrief meeting.

Program	Strengths	Challenges/ Limitations
Amplify Science (6-8th)	• Strong storyline (lessons connected and rigor elevated throughout unit) • Engaging simulations (built in to online platform) that model relevant phenomena • Multiple attempts for students to develop their understanding of phenomena • Strong supports/resources for teachers • Automatic differentiation (grouping) based on student data • Incorporates 21st century skills • Strong cross-content connections (ELA/Math)	• Best suited for instruction that relies primarily using technology • Some units may need supplemental hands-on activities • Need additional training on program capabilities and support for teachers and students as they implement, adapt and supplement.
STEMScopes (Physics/ Earth and Biology/ Earth)	• Storyline developed in spirit of the CA NGSS Framework. • Lessons are presented using the 5E instructional model - a familiar model that has roots in our district's professional learning structures. • Materials include support for all learners. • Materials include various forms of assessments and item banks for CAST preparation. • Materials include opportunities for students to engage in rich hands on learning as well as technology based learning.	• Piloting teachers felt that they might need support in adapting, extending and supplementing lessons (incl. additional practice, assessment items, hands on labs, etc.). • (Physics in the Universe) - Piloting teachers and students reflected on support needs for mathematical applications. • (The Living Earth) - Piloting teachers reflected on weak phenomena connections and the need for support to strengthen or swap out phenomena based experiences.
Pearson - Experience Chemistry (Chemistry/ Earth)	• Phenomena based experiences were revisited after each lesson giving students a chance to revisit and track their learning. • Assessment items were focused	• Teachers expressed more need and opportunities for practice. • Piloting teachers reflected on weak phenomena connections and the need for support to

	on application and problem solving vs. memorization of facts. ● Laboratory experiences have differentiated options which allows teachers to make instructional decisions about how much structure to provide students as their skills improve (i.e. giving students a procedure vs. having students write their own procedure).	strengthen or swap out phenomena based experiences.

VII. Lessons Learned/Next Steps:

As instructional materials become more technology based/rich, the district will need to reassess its plans for building a stronger technology infrastructure.

Next steps in the district's implementation of the adopted instructional materials include, but are not limited to the following:

- It is acknowledged that Amplify Science 6-8 has technology needs associated with it, and as such we have included additional technology resources to school sites (elementary, K-8, middle schools) in the adoption budget.
- Provide professional learning for leaders and teachers to build their capacity to effectively utilize the adopted instructional materials including addressing the challenge areas identified by the instructional materials committee.
- Co-create curriculum maps with teachers to outline expectations and use of the newly adopted instructional materials and provide professional learning on their use.
- Assess the curriculum embedded assessments for recommendations for use in classrooms and for district-wide assessments.
- Develop and provide workshops for parents/guardians on effective use of the adopted instructional materials.

Overview of the CA NGSS TIME Sections

The implementation of the CA NGSS TIME is an iterative process and requires multiple perspectives and lenses. The process is divided into six sections.

Introduction. The introduction provides the purpose and rationale for using the *CA NGSS TIME* and includes short excerpts from the CA Science Framework that introduce users to CA NGSS terminology and reinforce the instructional shifts for the CA NGSS.

Section 1: Develop District Lens. Time: approximately 3–4 Hours

Preparing the team to evaluate instructional materials based on the district's unique needs is an important part of the adoption process because it can assist adoption committees in selecting the best possible programs for their particular student population. Section 1 provides support for forming a district adoption committee and establishing a profile of the district's needs and resources. The District Lens can serve as a guide that will lead to an informed perspective regarding the needs of students and teachers in this adoption cycle. *This Section needs to be completed by each district and should be led by the district adoption committee chair.*

Section 2: Prescreen. Time: approximately 16 Hours (CA NGSS TIME professional learning and 6-8 Hours)

The Prescreen process narrows the field of programs to the most promising options. The Prescreen process does not provide a thorough vetting of resources and is not sufficient to support claims of being designed for the NGSS. Section 2 begins broadly in scope and moves toward a more targeted examination of CA NGSS alignment. The tasks in section 2 include a broad look at each program to help districts determine which programs move forward in the adoption process. It is recommended that a small subgroup of the district adoption committee completes the Prescreen process. Prior to the activities in section 2, the district needs to obtain copies of instructional materials. An essential component of Section 2 is a professional learning session that calibrates teams and models the Prescreen process to be used for instructional materials under consideration. These professional learning sessions will be led by county partnership teams. Districts should plan to attend a CA NGSS TIME professional learning session prior to completing the Prescreen process. *A facilitator script and presentation are included in CA NGSS TIME for adoption committees that do not attend.*

Section 3: Paper Screen. Time: approximately 28 Hours (CA NGSS TIME professional learning and approximately 6 Hours per program under consideration)

- Overview
- Rubric 1 – Foundations
- Rubric 2 – Student Learning
- Rubric 3 – Monitoring Student Progress
- Rubric 4 – Teacher Support
- Rubric 5 – Program Evaluation (Optional)

The Paper Screen process gives the adoption committee an opportunity to examine instructional materials prior to piloting programs. The whole committee uses rubrics to conduct a deeper, more thorough investigation of each of the programs selected in section 2: Prescreen. An essential component of section 3: Paper Screen is for the adoption committee to engage in a shared professional learning experience in order to calibrate themselves using resources not under review. This essential component of section 3: Paper Screen should not be skipped. Using evidence and rubrics, this deeper dive leads districts through the process they will use for determining which programs to pilot. These professional learning sessions will be led by county partnership teams. Districts should plan to attend a CA NGSS TIME professional learning session prior to completing the Paper Screen process. *Facilitator scripts and presentations are included in CA NGSS TIME for adoption committees that do not attend.*

Section 4: Pilot Materials. Time: will vary

The Pilot Materials process allows for analyzing instructional materials while using them in classrooms. The instructional materials used in this process are chosen based on section 3: Paper Screen. This gives a more thorough analysis of each program under review and allows for additional evidence from teachers and students to be used in section 5: Select and Recommend.

Section 5: Select and Recommend. Time: will vary

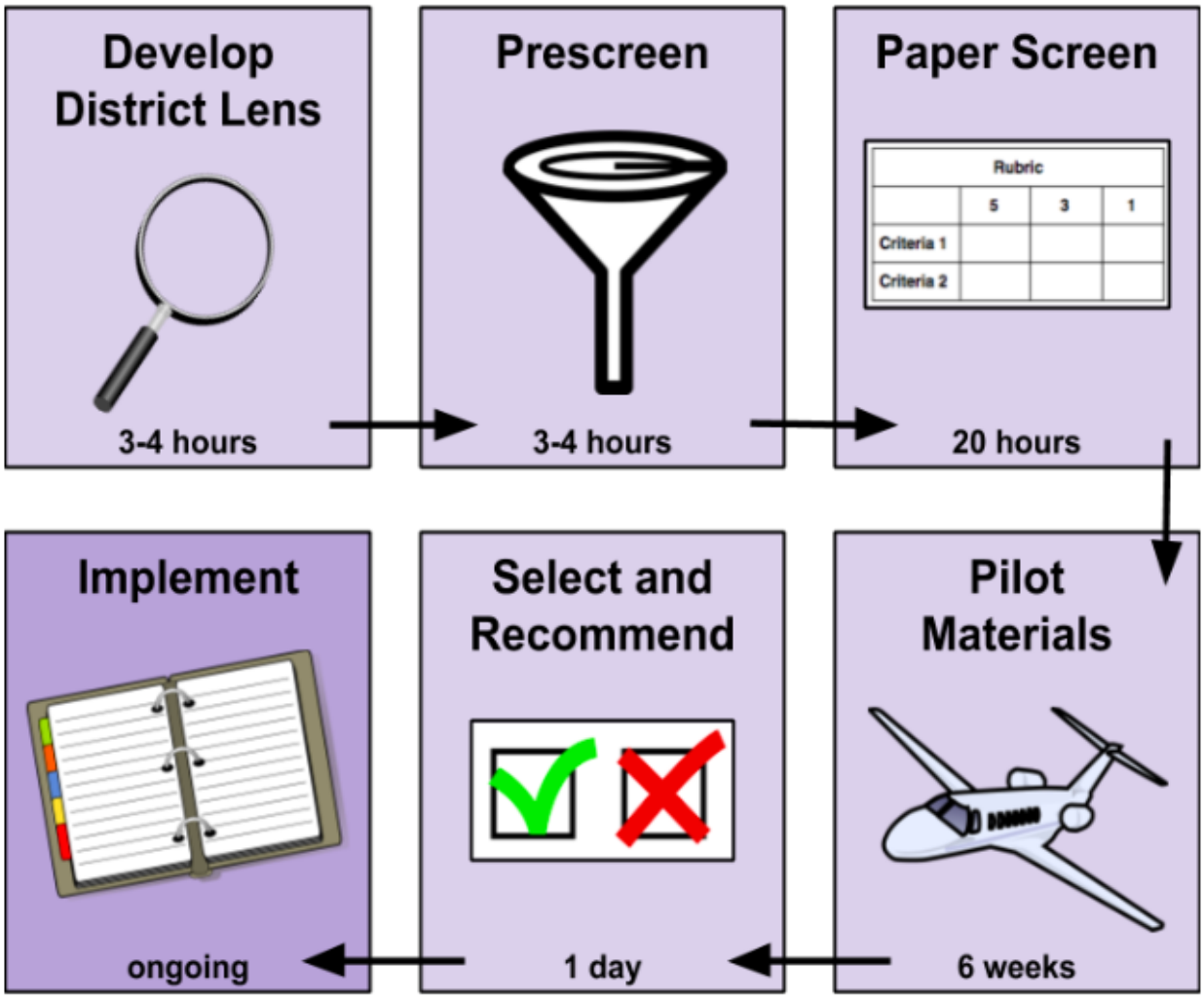
The Select and Recommend process provides a decision-making framework to support the adoption committee in coming to consensus about the instructional materials to be adopted. Evidence and data from sections 1–4 is used as support for selections.

Section 6: Implement. Time: Length of adoption

The Implement section provides tools to support planning and monitoring the ongoing implementation of adopted instructional materials.

The following graphics represent the six sections of the *CA NGSS TIME*.

Figure 1.4. Six Sections of the *CA NGSS TIME*



Things to consider before starting the adoption process

- Establish adoption timeline
- Determine who will be involved in each step of the adoption process
- Set dates and times for *CA NGSS TIME* meetings
- Establish platform (e.g., Google Docs, Dropbox) to house relevant resources (e.g., *CA Science Framework*, *CA NGSS TIME*, district data, completed charts, meeting notes)
- Determine how the committee chair/facilitator will collect and archive all completed tools

Science Curriculum Feedback Needed!

Image Credit: http://lasrep.ircc.it

"We Want You!"

- Review hard copy materials upstairs in the foyer near the elevator.

OR

- Review digital materials online @ www.scusd.edu/science

Deadline for Review:

February 3rd, 2020