**This advisory recommendation has not been approved by the Instructional Quality Commission or the State Board of Education.**

# REVIEW PANEL ADVISORY RECOMMENDATION 2018 SCIENCE ADOPTION OF INSTRUCTIONAL MATERIALS

| **Publisher** | **Program** | **Grade Level(s)** |
| --- | --- | --- |
| Houghton Mifflin Harcourt Publishing Company | California HMH Science Dimensions | 6–8i |

## Program Summary:

California HMH Science Dimensions includes: California Student Edition (SE) Interactive Worktext; California Student Online Interactive Digital Curriculum; California Teacher Edition (TE); California Teacher Digital Management Center; California Assessment Guide (AG).

## Recommendation:

California HMH Science Dimensions is recommended for adoption for 6–8i because the instructional materials include content as specified in the Next Generation Science Standards for California Public Schools (CA NGSS) and meet all the criteria in Category 1 with strengths in categories 2–5.

## Criteria Category 1: Alignment with the CA NGSS Three-Dimensional Learning

The program includes content as specified in the CA NGSS and includes a well-defined sequence of instructional opportunities that provides a path for all students to become proficient in all grade-level performance expectations.

**Citations:**

* Criterion #1.1, Grade 6, MS-LS1-2 Print/Digital AG Performance-Based Assessment 3, Task 2, pp. 280–288; Grade 6, MS-LS1-4, Print TE Unit 5 pp. 379K–379N, Print/Digital SE and TE p. 380, Digital SE and TE Unit 5 Unit Project Worksheet (You can find this in the Resources Menu on the homepage of the digital edition.); Grade 7, MS-LS1-7, Print/Digital AG Performance-Based Assessment 4 Task 2 pp. 321–328; Grade 7, MS-LS2-3, Print/Digital AG Performance-Based Assessment 4 Task 3 pp. 329–336; Grade 8, MS-LS3-1, Print/Digital AG Performance-Based Assessment 5 Task 2 pp. 349–361; Grade 8, MS-ESS1-1 Print/Digital AG Performance-Based Assessment 3 Task 1 pp. 291–298, Task 2 pp. 299–304. Program aligns to the CA NGSS for grades 6-8.
* Criterion #1.13: Grade 6, Print/Digital SE/TE p. 175. The materials provide support for students to develop grade-level appropriate academic language and discipline-specific vocabulary through their use in context in classroom discourse around science phenomena (science talk), and through well-written and grade-level appropriate text resources.
* Criterion #1.15: Grade 6, Print/Digital SE/TE p. 367. Instructional resources, where appropriate, examine humanity’s place in ecological systems and the necessity for the protection of the environment (EC Section 60041).Resources include instructional content based upon the Environmental Principles and Concepts developed by the California Environmental Protection Agency and adopted by the SBE (Public Resources Code Section 71301) in context and aligned to the CA NGSS, as exemplified in Appendix 2.
* Criterion #1.20: Grade 8, Print/Digital SE/TE pp. 222-223, 225, 226-227. Instructional resources include opportunities for reflection on the nature and history of science and on their science learning as indicated in the CA Science Framework.

## Criteria Category 2: Program Organization

The organization and features of the instructional materials support instruction and learning of the CA NGSS.

**Citations:**

* Criterion #2.1: Grade 7, TE pp. T26-T34. Sequential organization of the material provides structure concerning what students learn each year and allows teachers to convey the science content incorporating the three-dimensional learning expressed in the CA NGSS.
* Criterion #2.3: Grade 6, TE p. 268B. Instructional resources explicitly state which knowledge and skills learned in prior grades or units are applied and extended to accommodate new knowledge and skills.
* Criterion #2.4: Grade 7, TE p. 274. Teacher resources provide support to engage students in three-dimensional learning and suggest research-based strategies to elicit student thinking and support student discourse
* Criterion #2.5: Grade 8, TE pp. T30-38. The instructional resources are grade-level specific and provide instructional content for 180 days of instruction for at least one daily class period, including an estimate of the necessary instructional time.

## Criteria Category 3: Assessment

The program includes multiple models of both formative and summative assessment tasks for measuring what students know and are able to do and provides guidance for teachers on how to use scoring rubrics and interpret assessment results to guide instruction.

* Criterion #3.1: Grade 6, AG pp. 316-329. Assessments in the instructional resources reflect the three-dimensional nature of the CA NGSS and the CA Science Framework. Assessment tools measure what students know and are able to do, as defined by the PEs in the CA NGSS. Assessments stress performance tasks rather than rote memorization.
* Criterion #3.4: Grade 8, TE p. 503. Brief formative assessment tools and practices at key stages in the unit of instruction are designed to elicit current understandings and preconceptions and to provide evidence of students’ progress toward mastering the three-dimensional learning called for in the CA NGSS and the CA Science Framework. In addition to providing formative assessment tools, instructional materials also provide teachers with strategies of how to address preconceptions during instruction. These strategies are differentiated for different age levels.
* Criterion #3.5: Grade 7, TE p. 239. Assessments yield information teachers can use in planning and modifying instruction to help all students meet or exceed the standards.
* Criterion #3.7: Grade 6, TE pp. 483-484. Summative assessments are designed to provide valid, reliable and fair measures of students’ progress and attainment of three-dimensional learning after a period of instruction (for example at the end of a chapter, unit, or course) involving multi-component tasks including, but not limited to: hands-on or simulation-based performance tasks, open-ended constructed response problems, and scoring of portfolios of student work collected over the course of instruction. Selected-response items require analysis and reasoning to answer them, rather than simply memorized responses.
* Criterion #3.10: Grade 7, SE pp. 455-456. Assessment tools include multiple measures of student performance as addressed in the assessment chapter in the CA Science Framework, including, but not limited to, engineering design and lab practical tasks; performance-based tasks; open-ended, short answer and essay responses; lab reports; research projects; computational simulations; and oral presentations.

## Criteria Category 4: Access and Equity

Program materials ensure universal and equitable access to high-quality curriculum and instruction for all students and provide teachers with suggestions for differentiation for students with special needs.

**Citations:**

* Criterion #4.1: Grade 6, TE p. 229. The instructional resources reflect the goals of access and equity outlined in chapter 10 of the CA Science Framework.
* Criterion #4.1: Grade 7, SE p. 161. The instructional resources reflect the goals of access and equity outlined in chapter 10 of the CA Science Framework.
* Criterion #4.2: Grade 6, TE p. 243. See Integrated ELD. At every grade level, suggested lessons and teacher resources include research-based strategies to address the needs of English learners consistent with the CA ELD Standards.
* Criterion #4.2: Grade 8, TE p. 23. At every grade level, suggested lessons and teacher resources include research-based strategies to address the needs of English learners consistent with the CA ELD Standards.

## Criteria Category 5: Instructional Planning and Support

The instructional materials provide coherent guidelines for teachers to follow when planning three-dimensional instruction and are designed to help teachers provide effective standards-based instruction.

**Citations:**

* Criterion #5.1: Grade 7, TE p. T28-T34. Program resources include a curriculum guide for the academic instructional year for teachers to follow when planning for 180 days of instruction.
* Criterion #5.5: Grade 6, TE pp. 108a-108b, Integrating the Three-Dimensions of Learning. Teacher resources provide background knowledge about the SEPS, DCIs, and CCCs and discuss the desired level of SEPs in which students will engage, including how the three dimensions are integrated into units and lessons.
* Criterion #5.6: Grade 8, TE p. 490. All suggested student tasks, including classroom activities, end-of chapter tasks, suggested out-of-school activities, and assessment tasks are supported with guidance for the teacher on how to implement and, where appropriate, grade the task. Assessment keys and rubrics are provided.
* Criterion #5.7: Grade 7, SE/TE pp. 288-289. Teacher and student resources have correlating page numbers in print resources or corresponding references in electronic resources.
* Criterion #5.21: Grade 6, TE p. 381, Integrated ELD/Proficiency Levels. The teacher resources provide guidance and support for engaging students in collaborative conversations using grade level appropriate academic vocabulary for scientific discourse.

## Edits and Corrections:

The following edits and corrections must be made as a condition of adoption:

The panel recommends the following edits and corrections:

| # | Grade Level | Component | Page Number(s) | Current Text | Proposed Corrected Text | Reason for Edit |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 7 | TE | T28-T34 | Unit Performance Task **(**Optional**)** | Required [in every instance within the adjusted task allotted time column of the pacing guide for grades 6, 7, and 8.] | The evidence for some performance expectations only appears in the performance tasks. |
| 2 | 7 | TE | T28-T34 | Performance-Based Assessment (Assessment Guide) (Optional**)** | Required [in every instance within the adjusted task allotted time column of the pacing guide for grades 6, 7, and 8.] | The evidence for some performance expectations only appears in the performance tasks. |
| 3 | 7 | AG | T43 | 1. Asking Questions and Defining Problems | Add SEP codes from the AG to the TE (as applicable). | SEP Code is inconsistent between AG and TE. |
| 4 | 8 | AG | xxxv-xxxvii | Example 1: Develop and/or use a model to predict and/or describe phenomena.  Example 2: Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales. | Example 1: Develop and use a model to describe phenomena.  Example 2: Develop a model to generate data to test ideas about designed systems, including those representing inputs and outputs (MS-ETS1-4).  [These proposed corrected texts may replace the current text or be added to the table. In addition to these examples, the table needs to be checked for the presence of each SEP bullet point as listed in the CA NGSS.] | The current table lists the progression of the SEP bullet points, which fall short in meeting the PE criteria in the CA NGSS, due mainly but not entirely to the and/or statements. |
| 5 | 8 | TE | 241, 246 | Step 2: Have the person playing Earth….  Step 3: Keeping the moon held  Step 4: Switch roles and repeat STEPS 2 and 3 | Step 2: Use these materials to demonstrate each phase of the moon. | This PE for the students is to develop the model. By making this change the students will develop a model and not just use a model. |
| 6 | 8 | TE | 246 | Step 2: The partner playing Earth faces the sun….  Step 3: Earth closes one eye and slowly turns…..  Step 4: Earth continues to turn left…. | Step 2: Use these materials to demonstrate both types of eclipses. | The PE for the students is to develop the model. By making this change the students will develop a model and not just use a model |
| 7 | 6 | TE | 178 | As students watch the video, ask them to create a list of every form of energy they observe. | Teacher asks inquiry-oriented question about the phenomena. Students conduct an activity to investigate the phenomena. | To align student exploration to the 5E model of instruction in all units in all grades. |
| 8 | 7 | TE | 75 | Review the image with the students. Point out that some of the rock in the image is liquid and some is solid. | Teacher asks inquiry-oriented question about the phenomena. Students conduct an activity to investigate the phenomena. | To align student exploration to the 5E model of instruction in all units in all grades. |
| 9 | 8 | TE | 579 | Students should record every time someone takes a tissue and how many sheets they use. At the end of the week, examine the table of data as a class. | Teacher asks inquiry-oriented question about the phenomena. Students conduct an activity to investigate the phenomena. | To align student exploration to the 5E model of instruction in all units in all grades. |
| 10 | 8 | TE | 374 | Early Stages of Embryo Development Picture | Add to teacher resource: Teachers should lead a class-wide discussion on if/and when embryological development is linear or nonlinear. | The SEP for this section includes: Analyze displays of data to identify linear and nonlinear relationships. |
| 11 | 8 | TE | 391F | Explore/Explain | Explore needs to be a separate section from Explain even if iterations or spiraling is desired.  Add a written description as to when a teacher/student should shift their role from what is required in Explore to what is required in Explain. | Chapter 11 of CA Science Framework, p. 14 describes an iterative cycle within the 5Es. The curriculum should describe this iteration in detail just as the Explore and Explain segments are described in detail in the Science Framework. |
| 12 | 7 | TE | 523B | Students will be able to see these interactions and then take part in a collaborative conversation with their group. | Students will be able to see these interactions. Students should use their KWL chart in their evidence notebook to support the collaborative conversation with their group. | Recommendations for students with auditory disabilities are superficial, lack variety, and do not respond to the needs of individual students as described by the California Framework. |
| 13 | 8 | TE | 391B | Students with an auditory impairment may need extra support during this unit. Make sure to provide numerous opportunities for visual and kinetic learning. In lesson 1, students participate in a hands on lab to analyze species of salamanders. Students use their other senses to complete the lab and create a map. | Students with an auditory impairment may need extra support during this unit. In lesson 1, students participate in a hands on lab to analyze species of salamanders. Make sure to provide numerous opportunities for visual and kinetic learning and have students reference these opportunities and concept map during the unit. | To support students with disabilities using a variety of strategies. |
| 14 | 6 | TE | 508B | Have students write the term greenhouse effect in a word journal. Discuss where the term greenhouse effect may have originated and explain how greenhouses work to help keep plants warm. As students study this concept, have them draw a labeled diagram. | Have students draw a labeled diagram that summarizes the greenhouse effect. As they study this concept, have students discuss where the term greenhouse effect may have originated and explain how greenhouses work to keep plants warm and revise their diagram. | UDL recommends having students draw and label before they write. |
| 15 | 7 | TE | 248B | Use affixes and root words to show how words that students encounter in this lesson are related. For instance, -oxide describes a compound with oxygen in it. | As students analyze the observations from the hands-on activity, have students identify how affixes and root words are connected in their own writing. Then, use affixes and root words to show how words that students encounter in this lesson are related. For example... | Language development strategies are good teaching practice for all students, but should be done in concert with the hands-on content learning. |
| 16 | 8 | TE | 64B | Begin by reviewing the terms electric charge, magnetism, and gravity. Students can create a list of verbs to learn in advance to help throughout the lesson. | Begin by reviewing the terms electric charge, magnetism, and gravity. Students can create a list of verbs to learn in advance to help throughout the lesson. | Language development strategies are good teaching practice for all students, but should be done in concert with the hands-on content learning. |
| 17 | 6 | Designated ELD Student Handbook | 53 | …deposition. The process in which material is laid down. | Change of phase from gas to solid. Also add scientific definition of sublimation: Change of phase from solid to gas. | The Spanish word for deposition is a cognate that indicates it’s the opposite of sublimation, making sublimation conspicuous by its absence. |
| 18 | 6 | Designated ELD Student Handbook | 1 | Networvk | Network | Typographical error. |
| 19 | 6 | TE | T5 | Los Angelas | Los Angeles | Text correction. |
| 20 | 6 | TE | 534 | …chaparral ecosystem… | desert chaparral ecosystem or desert ecosystem | Joshua Tree is incorrectly identified as strictly chaparral rather than the more correct desert or desert chaparral. Also the labelling expectation is unclear. |
| 21 | 7 | TE | 329 | Question 16, item B shows colliding plates creating a valley. Text states: where two continental plates collide, mountains form. | Edit picture to reflect purely mountain building. | A picture of colliding continental plates that create a valley is confusing. Change in text will then be consistent with the picture. |
| 22 | 7 | TE | 157, Exploration 1, Item 4 | Diagram of water molecule shows hydrogen in blue, and shows hydrogen atoms in water molecule designated as oxygen, and oxygen as hydrogen. | Correct molecule model diagram to show H2O instead of HO2. Also recommend revising diagram colors throughout the text to white for hydrogen, black for carbon, blue for nitrogen, and green for chlorine, as appropriate, and as consistent with commonly available molecular models found elsewhere, especially in molecule model kits and in web-based diagrams. | Typographic error in model. There is a conventional color scheme for atoms. |
| 24 | 7 | TE | TR2 | Joshua Tree National Park is in a rain forest. | Joshua Tree National Park is in a rain shadow. | Incorrect information. |
| 25 | 6 | AG | 43 | Question 6. The salinity of each sample is listed in parts per trillion (ppt). | The salinity of each sample is listed in parts per thousand (ppt). | Incorrect information. |
| 26 | 6 | Designated ELD Student Handbook | 15 | Risk-benefit analysis: the comparison of the risks and benefits of a decision or product | The negative impacts of a decision compared to the positive results of the same decision. | The same words cannot be used to define themselves. |
| 27 | 8 | TE | 428 (re: ocelot) | It has a unique patterned coat, sharp eyesight, and sharp teeth. | It has a unique patterned coat, visual acuity, and sharp teeth. | Two uses, with two different meanings of the word, in the same sentence could be confusing to all students, but especially to English learners. |
| 28 | 7 | TE | 122, Diagram 16E | Diagram E has 4 atoms of hydrogen instead of 3 as in all other drawings in this question. | Delete one atom of hydrogen from the diagram E ball-and-stick model, unless this is an intentional distractor. | Appears to be an error. |
| 29 | 6 | TE | 113 | Step 1 asks students to design their own investigation. Steps 2-12 asks students to follow a prescribed investigation. | Use Step 1, and then allow students to conduct their investigation.  Present parameters as needed for safety and to acknowledge classroom constraints, as part of the student design process. | Students must be planning and conducting investigations to satisfy the full content of the NGSS  (CA Framework Ch. 1, p.31  The inclusion of planning investigations represents a shift for many classrooms, but is an essential part of SEP-3.) The planning stage is a bridge to the questions that originally motivated students’ inquiry. The questions strongly dictate the type of data collected, how precise the data need to be, how much data to collect, and which tools to use.) |
| 30 | 7 | TE | 185 | Students are directed to follow a prescribed procedure. | Remove existing lab directions.  Use the “putting the lab in context” directions to guide students.  Present parameters as needed for safety and to acknowledge classroom constraints, as part of the student design process. | Students must construct explanations and design solutions to satisfy SEP 6.  (CA Framework Chapter 1, p.37. Students will still learn accepted scientific concepts and terminology, but only as they seek information and words to develop their own models and explanations of phenomena.) |
| 31 | 8 | TE | 316 | Students are directed to follow a prescribed procedure. | Remove existing lab directions.  Use the putting the lab in context directions to guide students.  Present parameters as needed for safety and to acknowledge classroom constraints, as part of the student design process.  Have students present and improve their models using peer and teacher feedback. | Students must have opportunities to develop, present, and revise models to satisfy the full content of the NGSS.  (CA Framework Ch. 1 p.26. Students should be continuously developing and presenting their models, in collaboration with other students, while engaged in the practices of science and engineering.) |
| 32 | 7 | TE | 246 | Question 5, Answer A (deemed the correct answer): Why do you think the starch molecule shown is a good source of energy for an organism? A. The many bonds in the starch molecule store energy. | A. The starch molecule contains many subunits that can form glucose. | Energy is not stored in bonds, as evidence by the fact that energy is required to break bonds. For example, energy in starch is stored as polymers of glucans. Rehydration breaks bonds allowing them to reform as glucose, which, in turn, release energy. |

## Social Content Citations: none

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