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

# REVIEW PANEL ADVISORY RECOMMENDATION2018 SCIENCE ADOPTION OF INSTRUCTIONAL MATERIALS

| **Publisher** | **Program** | **Grade Level(s)** |
| --- | --- | --- |
| Knowing Science LLC | Knowing Science Curriculum-Physical, Life, Earth & Space | K–5 |

## Program Summary:

Knowing Science Curriculum-Physical, Life, Earth & Space includes: Knowing Science K-5 Curriculum includes: Physical Science (PS), Life Science (LS), Earth & Space Science (ESS) Teacher Manuals (TE).

## Recommendation:

Knowing Science Curriculum-Physical, Life, Earth & Space is not recommended for adoption for K–5 because the instructional materials do not include content as specified in the Next Generation Science Standards for California Public Schools (CA NGSS) and do not meet all the Criteria in Category 1 or have strengths in Category 4.

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

The program does not include content as specified in the CA NGSS and does not include a well-defined sequence of instructional opportunities that provides a path for all students to become proficient in all grade-level performance expectations.

**Citations:**

* Criteria Category 1, criterion 1: Standards Not Met:
	+ Grade K, PE K-ESS3-2, ESS TE pp.43–45. The kindergarten materials did not cover the Performance Expectation (PE) that students ask questions to obtain information. This also includes the Science and Engineering Practice (SEPs) of Asking Questions and Defining Problems, as well as ETS1.A: Defining and Delimiting an Engineering Problem.

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* + Grade 2, PE 2-PS1-2, PS TE pp.128–131, pp.137–142. The PE was met, however, the Crosscutting Concepts (CCCs) referring to science and the natural world were not. There is no reference to human-made products and their relationship to the natural world or materials in relationship to the PE.
	+ Grade 4, PE 4-PS3-3, PS TE pp.21–26, pp.33–34, pp.41–43, pp.45–47. While the Knowing Science curriculum provides opportunities for students to predict outcomes on patterns such as cause and effect relationships, the Grade 4 materials do not require students to ask questions, which is a main component of the PE.
* Criterion 1.10: Grade 4, ESS TE p.14, PS TE p.51; Grade 5, ESS TE pp.217–218. While the science curriculum does provide opportunities for students to access informational text (Grade 5 ESS TE pp.217–218), simulations (Grade 4 ESS TE p.14), and other media (Grade 4 PS TE p.51), there is no evidence of diverse examples of notable scientists and engineers.
* Criterion 1.11: Grade K-5, all material. As noted by the publisher citations, the Knowing Science curriculum does not make any explicit reference to any demographic groups.
* Criterion 1.12: Grade 1, PS TE p.24, p.152; Grade 4, LS TE p.55. Student assignments and expectations are linked to California Common Core State Standards for English Language Arts and Math, however no links are provided to CA English Language Development standards.
* Criterion 1.14: Grade 2, LS TE p.29. While the Knowing Science curriculum provides a vocabulary bank at the beginning of each section, guidance and support for non-standard English speakers is not included within the curriculum.
* Criterion 1.16: Grade 4, LS TE pp.41–106. While curriculum has students designing crayfish prosthetics, there is no link to human organ and tissue donation.
* Criterion 1.17: Grade 4, LS TE pp.69–71. While the Knowing Science curriculum focuses upon the creation of a crayfish prosthetic, discussion trends and career pathways are not included within the curriculum.

## Criteria Category 2: Program Organization

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

**Citations:**

* Criterion 2.1: Grade 2, PS TE p.13, ESS TE p.9, LS TE p.6. Examples of sequential organization and structure for teachers are found in the Learning Progressions section.
* Criterion 2.2: Grade 3, PS TE pp.20–23. The teacher resources supply questions to pose to students that are well designed and will help them assess student knowledge and skills, student discourse, and guide student learning.
* Criterion 2.3: Grade 5, ESS TE p.9. Instructional resources explicitly state unit “Learning Progressions” at the beginning of each unit that build on new knowledge and skills.
* Criterion 2.4: Grade K, ESS TE xvii, pp.13–19. Knowing Science uses the research-based 5E lesson model to engage students in three-dimensional learning and to elicit student thinking and discourse.
* Criterion 2.6: Grade 4, PS TE p.7, pp.9–10, pp.12–16. Content is well organized and provides students an opportunity to achieve the CA NGSS and CA Science Framework.

## 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.

**Citations:**

* Criterion 3.3: Grade 3, PS TE pp.20–22. Teacher resources embed formative assessment opportunities into learning activities to help meet all dimensions of the PE.
* Criterion 3.5: Grade 4, PS TE pp.23–24, p.27. Assessments within the Knowing Science curriculum assess student learning, yield information teachers can use in planning and modify instruction to help meet or exceed the standards.
* Criterion 3.8: Grade 1, LS TE p.58, p.65, pp.98–99. Students’ progress toward meeting the three dimensions of CA NGSS are assessed through writing and performance tasks.
* Criterion 3.10: Grade 2, ESS TE p.12, p.35, p.37, p.55, LS TE p.149, p.155, PS TE p.93, pp.148–150. Assessment tools include multiple measures of student performance.
* Criterion 3.11: Grade 5, ESS TE p.113. The Performance Rubric includes assessment on students obtaining information from past ages and applying information literacy skills on science topics.

## Criteria Category 4: Access and Equity

Program materials do not ensure universal and equitable access to high-quality curriculum and instruction for all students and do not provide teachers with suggestions for differentiation for students with special needs.

**Citations:**

* Criterion 4.1: Grade 1, LS TE pp.34–39. The materials fail to provide examples of how the instructional resources reflect the goals of access and equity outlined in chapter 10 of the CA Science Framework. Most notably, there is no support for English Language Development learners.
* Criterion 4.2: Grade 2, PS TE pp.63-73; Grade 5, LS TE pp.9-19. At every grade level there are no suggested lessons, teacher resources or research-based strategies to address the needs of English learners.
* Criterion 4.3: Grade 3, PS TE p.13; Grade 4 PS TE p.21. The materials did not provide adequate instructional resources to address the needs of students with disabilities.
* Criterion 4.4: Grade 3, PS TE p.13; Grade 4, ESS TE p.107. The panel found there is no evidence of guidance to support students with special needs, such as students living in poverty, foster youth, and students below grade level.

## 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 5.2: Grade 4, ESS TE p.33, p.71, PS TE p.11, p.52, LS TE p.9, pp.43–45. The materials include estimated instructional time for each activity, lesson, chapter, and unit.
* Criterion 5.3: Grade 2, PS TE pp.18–25. Knowing Science provides guidance in daily lessons and units for checking for understanding to ensure three-dimensional learning.
* Criterion 5.6: Grade 5, ESS TE pp.103–113. All suggested student tasks, classroom activities, above and beyond resources, as well as out of school opportunities are supported with assessment tasks, rubrics and varied forms of assessment, along with guidance for teacher implementation.
* Criterion 5.12: Grade 1, PS TE p.24, p.49, p.71. Teacher resources provide links between student assignments and grade level appropriate expectations in the CCSS for ELA and Math.
* Criterion 5.19: Grade 3, ESS TE p.123. Resources provide teachers with instructions on how outside resources (e.g., local Red Cross guest speaker, websites for information and videos, content DVDs, and suggested literature) can be incorporated into a three-dimensional learning, standards-based science program.

## Edits and Corrections:

The panel recommends the following edits and corrections:

| # | Grade Level | Component | Page Number(s) | Current Text | Proposed Corrected Text | Reason for Edit |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | K-5 | All materials | Cover | Knowing Science covers have the wrong colors labeled for the three dimensions. | SEP should be blue, DCI should be orange, and CCC should be green. | Design error |
| 2 | 1 | PS TE | 70 | “Extending Lesson” | “Above and Beyond” | Consistency throughout program |
| 3 | 3, 4, 5 | All TEs | n/a | Missing icons | Add “CCC” icons in margins. | Consistency throughout program, icons present in K–2 |

## Social Content Citations:

The panel identified the following social content violations:

| # | SC Code | Grade Level | Component | Page Number(s) | Current Text | Proposed Corrected Text | Reason for Citation |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | L1 | 3 | ESS TE | 29 | Image of thermometers includes brand name “Acurite”. | Remove brand name. | Brand names and corporate logos |
| 2 | L1 | 4 | ESS TE | 77–94 | Use of brand name “Slinky” | Remove brand name | Brand names and corporate logos |
| 3 | L1 | 4 | ESS TE | 109–113 | Image and use of logo and brand name “Snap Circuits” | Remove logo image and brand name. | Brand names and corporate logos |
| 4 | L1 | 2 | PS TE | 99 | Image of branded object “Sunkist” soda bottle | Remove brand name. | Brand names and corporate logos |
| 5 | L1 | 2 | PS TE | 99 | Image of branded object “Pepsi” soda bottle | Remove brand name. | Brand names and corporate logos |
| 6 | L1 | K | PS TE | 24 | Image of branded item “RoseArt” crayon | Remove brand name. | Brand names and corporate logos |
| 7 | L1 | K | LS TE | 151 | Image of branded item “Billy Bee” honey | Remove brand name. | Brand names and corporate logos |
| 8 | L1 | 1 | LS TE | 79, 87 | Image of branded item “Velcro” | Remove brand name. | Brand names and corporate logos |
| 9 | E1 | 5 | ESS TE | 179 | Image depicts person of larger mass as obese. | Make person taller or use objects. | Negative stereotype of larger people |

California Department of Education, August 2018