**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)** |
| --- | --- | --- |
| Delta Education LLC | FOSS Next Generation Elementary | K–5 |

## Program Summary:

FOSS® Next Generation includes Investigations Guide (IG), Science Resource Book (SRB), Digital-Only Resources (DOR), Teacher Resources (TR), Science Notebook Masters (SNM), Teacher Masters (TM), Assessment Coding Guide (ACG), Assessment Charts (AC), Interim Assessment Master (IAM).

## Recommendation:

Delta Education LLC is recommended for adoption for K–5 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: Grade K, *Trees and Weather* IG pp.179-189 align to K-ESS2-1.
* Criterion # 1: Grade 1, *Sound and Light* SRB p.9 and IG pp.75-120 (Investigation 1: “Sound and Vibrations”) facilitate students’ full understanding of the topic.
* Criterion # 1: Grade 2, *Insects and Plants* IG pp. 314-318 (2-LS2-2) help students develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
* Criterion # 1: Grade 3, *Structures of Life* IG p.170 aligns to the CA NGSS Standards 3-LS1-1 by having students develop a model to describe an organism’s life cycle, showing that organisms all have in common birth, growth, reproduction, and death.

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* Criterion # 1: Grade 4, *Environments* IG pp. 125-126, 128, and 141; TR pp. C27-31, C54-55, D15-17, and D32-33; and SRB pp. 16-17 and 91-92 demonstrate how all three NGSS strands are woven together in the investigations for 4-LS1-1.
* Criterion # 1: Grade 5, *Living Systems* IG “Animal Nutrition” pp. 181-193 demonstrate how all three NGSS strands are woven together in a single investigation.
* Criterion # 4: Grades K-5, Framework and NGSS tab in each IG for the physical, life, and earth sciences books include explanations of performance expectations, disciplinary core ideas, science and engineering practices, cross cutting concepts, conceptual framework including background, and how NGSS standards are connected to each investigation.
* Criterion # 7: Grade 5, Earth and Sun SRB p. 77 contains an image of Galileo’s original notebook pages with images of the moons of Jupiter and their movement over time, and the SRBs contain multiple photographs.
* Criterion # 8: Grade 1, Sound and Light IG pp. 169-171 students explore the phenomenon of light and shadows.
* Criterion # 10: Grade 3, Structures of Life SRB pp. 12-15 include a story of Barbara McClintock and her research, and on pp. 78-80 there is the story of barn owls and how Rebecca Terry learned from owl pellets how the climate in the Great Basin changed over time.
* Criterion # 13: Grades K-5 IGs include (1) new word icons, (2) review vocabulary, (3) English-learner notes, and (4) scaffolded in-class readings/sense-making discussions; and the TR pp. B12-14 contain the grade-level planning guides with information about using science notebooks, science-centered language development, and student access and equity.
* Criterion # 18: Grade K, Materials and Motion IG pp. 138-141 have students observe particleboard and then engineer their own particleboard.

## Criteria Category 2: Program Organization

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

**Citations:**

* Criterion # 2: Grade 1, *Air and Weather* IG p. 183 provides instructional resources to support teacher questioning strategies.
* Criterion # 3: Grade 2, *Insects and Plants* IG p. 39 explicitly states which knowledge and skills learned in prior grades or units are applied.
* Criterion # 4: Grade 4, *Energy* IG p. 270 supports research-based strategies to elicit students thinking and supports student discourse.
* Criterion # 7: Grade K, *Animals Two by Two* IG pp. 74-77 include explanations to teachers regarding how the SEPs, DCIs and CCCs work together to support students in making sense of phenomena.
* Criterion # 9: Grade 3, *Structures of Life* IG pp. 67-80 encourage the meaningful use of technologies such as video clips or computer simulations to investigate phenomena.
* Criterion # 12: Grade 5, *Mixtures and Solutions* IG pp. 31-56 provide support resources that are an integral part of the instructional program and are clearly aligned with the CA NGSS.

## 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 # 1: Grade 5, Living Systems IG pp. 344-347 reflect the three-dimensional nature of the CA NGSS and the CA Science Framework in that assessments stress performance tasks rather than rote memorization.
* Criterion # 3: Grade K, Trees and Weather IG pp. 180-181 provide support to engage students in tasks that afford both learning and formative assessment opportunities at the same time.
* Criterion # 5: Grade 3, Structures of Life IG pp. 368-369 yield information teachers can use in planning and modifying instruction to help all students.
* Criterion # 8: Grade 1, Air and Weather IG p. 158 shows teachers how to measure student progress toward meeting the three dimensions of the CA NGSS through both writing and performance tasks.
* Criterion # 9: Grade 4, Energy ACG pp. 1-54 and IG pp. 391-417 provide resources that include student work expectations and analytical rubrics for scoring performance tasks and, where possible, examples of student work.

## 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 # 2: Grades K-2, TR pp. H31-47 contain information for teachers about science-centered English language development.
* Criterion # 2: Grades 3-5, TR pp. H37-53 contain information for teachers about science-centered English language development.
* Criterion # 2: Grades K-5, TR Section J (“CA ELD and FOSS”) contains sections about stages for implementing ELD instruction, integrated ELD instruction with FOSS (including science-centered language objectives), and “Guiding Principles for Science” and “Guiding Principles for ELD” instructional sections.
* Criterion # 3: Grades K-5, TR pp. F34-35 contain information on teaching science effectively to students with disabilities.

## Criteria Category 5: Instructional Planning and Support

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

**Citations:**

* Criterion # 2: Grade K, *Trees and Weather* IG pp. 70-71 provide an estimated instructional time for each activity, lesson, chapter, and unit.
* Criterion # 3: Grade 2, *Insects and Plants* IG p. 107 gives guidance in daily lessons and units of instruction with appropriate opportunities for checking for understanding and adjusting lessons, if necessary.
* Criterion # 4: Grade 4, *Environments* IG pp. 31-52 provide the articulation of three-dimensional learning by identifying the knowledge and skills learned in prior grades and prior grade-level units, as well as addressing how to connect and build on those learnings.
* Criterion # 5: Grades K-5, TRinclude the following: (1) grade 2, pp. B2-3 preview each instructional segment including which PEs are covered; (2) grade 2, pp. C1-47 contain information about what the science and engineering practices are as well as what is expected of students; and (3) grade 2, pp. D1-32 contain information about crosscutting concepts, how to integrate them into science instruction, and grade-level expectations.
* Criterion # 21: Grade K-5, IG for the earth and space, life, and physical sciences books contain a sense-making conversation between students and teachers (e.g. grade 4 “Soils, Rocks, and Landforms” pp. 140 and 236).

## Edits and Corrections:

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

| # | Grade Level | Component | Page number(s) | Current text | Proposed corrected text | Reason for edit |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 5 | IG: Mixtures and Solutions | 111 | “a solution is a mixture in which a solid (substance) dissolves in water to make a clear liquid; dissolve is when…” | “a solution is a mixture in which a solid (substance) completely dissolves in a liquid;” | Simple factual error.  Not all solutions need to dissolve in water, and they do not have to be clear to be a solution (coffee, etc.). |
| 2 | 5 | IG: Living Systems | 346 | I-check answer table | Change the “chamber A, chamber B, chamber C” in the results to include the missing variable. | Mislabeled heading in second chart |
| 3 | 5 | SRB: Living Systems | 44 | You boil it? | You boil it! | Typographical error |
| 4 | 5 | ACG | 40-41 | Photosynthesis diagram | Need to include the sun in diagram | Photosynthesis is not possible without the sun. |
| 5 | 5 | SRB: Earth and Sun | 102 | “When this happens, the burner is radiating heat and light.” | Burner heats by convection, not radiation. | Imprecise definition |
| 6 | 5 | SRB: Mixtures and Solutions | 26-27 | Crystals are not cubic. | Crystal structure should be cubic. | Simple factual error |
| 7 | 5 | ACG: Mixtures and Solutions | 6-7 | Precipitate is “pink.” | Change precipitate color from pink to “pale” or “bright pink.” | Ensure students know there is a chemical change since the solution is pink at the beginning. |
| 8 | 5 | SRB: Earth and Sun | 71 | Stephen Hawking (1942- ) | Add “2018” for Stephen Hawking’s death. | Factual edit |
| 9 | 5 | SRB: Soils, Rocks, and Landforms | 60 | “Dams and stadiums are made of concrete.” | Change “stadiums” to “stadia.” | Grammatical error |

## Social Content Citations: none

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