**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)** |
| --- | --- | --- |
| Twig Education, Inc. | Twig Science | K–6i |

## Program Summary:

Twig Science includes: Twig Science includes: Twig Science Teacher Editions (TE), Twig Science Student Twig Books (TB), Leveled Readers (LR) (On-, Above, Below and English Learner Levels), <http://www.twigscience.com/>, <http://www.twigsciencetools.com>, <http://www.twigsciencereporter.com>.

## Recommendation:

Twig Science is recommended for adoption for K–6i 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, PE K-LS1-1, Module 1, TE p.58/TB p.15; Grade 1, PE 1-LS1-2, Module 2, TE p.120/TB p.45; Grade 2, PE 2-ESS2-1, Module 3, TE p.18/TB p.7; Grade 3, PE 3-PS2-1, Module 1, TE p.121/TB p.35; Grade 4, PE 4-ESS 3-2, 3-5 ETS1-1, Module 4**,** TE p.133/TB pp.67-68; Grade 5, PE 5-ESS2-1, Module 3, TE p.6; Grade 6, PE MS-LS1-1, Module 1, TE p.246. The materials align to the CA NGSS, adopted by the SBE in September 2013.
* Criterion #2: Grade 4, Module 2, TE p.106; Grade 3, Module 2, TE p.184. There are examples of opportunities for students to use text, engage in discourse, and employ experiential learning to develop mastery of the three integrated dimensions (SEPs, CCCs, and DCIs) of the CA NGSS.

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* Criterion #7: Grade 1, Module 1, TE p.217; Grade 6, Module 1, TE p.199. These are examples of the use of primary sources such as scientific research, and photographs that are integrated into the three-dimensional learning, as grade level appropriate.
* Criterion #13: Grade 5, Module 3, TE p.160; Grade 4, Module 4, TE p.19. The materials provide support for students to develop grade-level appropriate academic language and use discipline-specific vocabulary through their use in context of classroom discourse around science phenomena and written grade level appropriate text resources.
* Criterion #18: Grade 5, Module 3, TE p.178; Grade 4, Module 2, TE p.57. The instructional materials provide support to students to address the applications of science in the development of technologies and in fields such as agriculture, medicine, engineering, and environmental protection. Resources support students to reflect on the interconnection between science, engineering, and technology, and to discuss ethical and regulatory issues.

## 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 3, Module 2, TE pp.210-217, TB pp.73-78, and TE pp.232-239 and TB pp.82-85; Grade 4, Module 5, TE pp.54-62 and TB pp.25-26. These are examples of instructional resources that support teacher questioning strategies as a tool to access students’ knowledge and skills, promote student-to-student discourse, and guide student learning.
* Criterion #3: Grade 1, Module 3, TE CA NGSS Framework Alignment foldout located at the back cover of the TE; Grade 5, Module 4, CA NGSS Framework Alignment foldout located at the back cover of the TE. These are examples of instructional resources that explicitly state which knowledge and skills learned in prior grades or units are applied and extended to accommodate new knowledge and skills.
* Criterion #4: Grade 1, Module 1, TE pp.75-129 and TB pp.23-36; Grade 4, Module 4, TE pp.200-226 and TB pp.87-96. These are examples of teacher resources that support student engagement in three-dimensional learning and suggest research-based strategies to elicit student thinking and support student discourse.
* Criterion #7: Grade 2, Module 2, TE pp.2-3, TE pp.48-49, TE pp.94-97, TE pp.144-147, and TE pp.202-205; Grade 6, Module 3, TE pp.2-3, TE pp.90-91, TE pp.186-187, and TE pp.250-251. These are examples of resources that include explanations to teachers regarding how the SEPs, DCIs, and CCCs work together to support students in making sense of phenomena and/or to design solutions to problems and build toward the PEs of the CA NGSS. Teacher resources support understanding of how PEs are developed within units and across units throughout a year.

## 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 4, Module 4, TE p.94; K-6 online multiple choice assessments; Grade 5, Module 1, TE p.224. 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.
* Criterion #3: Grade 2, Module 3, TE p.166; Grade 4, Module 2, TE p.202. Grades two and four are examples of how teacher materials provide support to engage students in tasks that provide both learning and formative assessment opportunities at the same time and provide guidance to teachers on how to embed formative assessment activities in the broader learning activity.
* Criterion #4: Grade K, Module 4, TE p.232; Grade 6, Module 3, TE p.270. Grades kindergarten and six are examples of how 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. The teacher materials also provide teachers with strategies of how to address preconceptions during instruction, and the strategies are differentiated for different age levels.
* Criterion #7: Grade 1, Module 4, TE p.156; Grade 5, Module 2, TE p.223. Grades one and five are good examples of summative assessments designed to provide valid, reliable, and fair measures of students’ progress and attainment of three-dimensional learning after a period of instruction. Multiple component tasks include hands on tasks, performance tasks, open-ended constructed response, and student work samples.

## 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 #1: Grade 4, Module 1, TE p.56. Materials provide examples of how the instructional resources reflect the goals of access and equity, as outlined in chapter 10 of the CA Science Framework.
* Criterion #2: Grade 5, TB Module 2, TE pp.70-77, pp.100-105. Strong supports for English learners in all modules of each grade, including using diagrams, photographs, and videos to support accessibility of the content.
* Criterion #3: Grade 1, Module 2, TE p.6. Teacher’s Edition has each Driving Question accompanied by supports and scaffolds for English learners, special needs students, and some cultural concerns. There is also a challenge for students who are above level and/or finish early.
* Criterion #4: Grade 5, TB Module p.4, p.11, p.21, p.40. Grade 2, TB Module 2, p.23, pp.95-96. Student books contain images of students of color, mixed groups of students working together, instances of girls engaging in science, and female scientists.

## 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 #1: Grade K–6, all modules. Resources include a curriculum guide for the academic instructional year for teachers to follow when planning for 180 days of instruction.
* Criterion #2: Grade 4, Module 2, TE pp.16–23. The teacher resources provide an estimated instructional time for each activity, lesson, chapter, and unit which allows for student engagement in the SEPs and engineering design projects.
* Criterion #12: Grade 5, Module 1, TE p.3, p.5. Instructional resources include a list of consumable and non-consumable equipment and materials required for each lesson and address safety issues included in the Science Safety Handbook for California Public Schools (CDE 2014).
* Criterion #14: Grade 5, Module 1, TE p.3, p.53, p.167, p.285, and p.321. Electronic learning resources, including technology-based assessments, support instruction that is connected explicitly to the CA NGSS, have a well-designed user interface, provide technical support, and include suggestions for appropriate and differentiated use.

## Edits and Corrections:

The following edits and corrections must be made as a condition of adoption: None

The panel identified the following social content violations: None.

California Department of Education, August 2018