**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)** |
| --- | --- | --- |
| TPS Publishing, Inc. | STEAM Exploration K–8 | K–8i |

## Program Summary:

STEAM Exploration K–8i includes: STEAM Exploration K-8 includes: Combined TEACHER Textbook (CTE); Combined Student Textbook (CSE); STEM project edition (SPE); interactive assessment tool (TA); assessment generator (AD); intervention focus tutorial (FT); Crosscutting Concepts Digital Library (CCD); safety reasoning library (SSE); reader activity book series (RABS); blackline master (BM); Science, ELA, Arts, Engineering and Mathematics library (STEAM); Digital Frog (DF); Archway phonics program (AW); Alaska suite of products (Alaska); Really Good Stuff kit (RGS); reteach and alternate library (RAL); Team Up Math Game (TU); advanced learner and gifted and talented library (ALGT); parent library (PL); picture glossary cards (PGC); Nest Family DVDs (NEST); KL is kit library; Instructional Support Library (IS); Online Menu (OM); Educational Paper Craft Packs (EPC).

## Recommendation:

STEAM Exploration K–8i is not recommended for adoption for K–8 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.

Criteria Category 1, criterion #1: Standards Not Met:

* Criterion #1: K-ESS2-2, pp.11-23 CTE S2. No opportunities for students to construct an argument on how plants change the environment to meet their needs
* Criterion #1: K-ESS3-2, pp.233-236 CTE S3. No opportunities for students to ask questions of their own to obtain information.

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* Criterion #1: 3-LS4-1, pp.3-5 CTE S3. Data sets are missing. No data given for students to “analyze and interpret” to “provide evidence of organisms and the environments in which they lived long ago.” The Clarification Statement in the PE states that fossil data could include “type, size, and distributions of fossil organisms...” Page 5 of Appendix 1 of the CA Science Framework, it states that in grades 3-5 students “analyze and interpret data to make sense of phenomena using logical reasoning, mathematics, and/or computation.”
* Criterion #1: 3-LS4-2, pp.119-133 CTE S2. No opportunities given for students to use evidence to construct their own “explanations for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.” The teacher, rather than the student, gives explanation and guides the students to why variation in species exists.
* Criterion #1: MS-LS2-2, p.80 CTE STEAM Exploration S3. No opportunities given to predict “consistent patterns of interaction” across multiple ecosystems (as stated in the Clarification Statement for MS-LS2-2). Students instead are given the pattern by the text that “helpful and harmful relationships and interactions exist in every ecosystem.” Students are then asked to research organisms that fulfill particular roles (predator, prey, pollinator, producer, decomposer) in different ecosystems without having opportunity to identify these relationships and patterns on their own.
* Criterion #1: MS-LS2-4, pp.18-27 CTE S4. Students are neither given empirical evidence, nor are they given opportunity to obtain empirical evidence in the form of graphs, data, charts etc. on which to base their argument.
* Criterion #1: MS-PS1-3; Grade 7 pp.71-74 SE S1, p.134 CTE S1. Students do not evaluate credibility, accuracy and possible bias of each publication and methods used as outlined in the SEP: Obtaining, Evaluating, and Communicating Information.
* Criterion #1: MS-ESS2-3, Grade 7 pp.273-285 TPE; pp.161-165 SE, pp.170-185 CTE S3 DCI ESS2.B is not met. No opportunity for students to analyze maps of water patterns. DCI ESS2.B states: “Maps of ancient land and water patterns based on investigations of rocks and fossils make clear how Earth’s plates have moved great distances, collided, and spread apart.”
* Criterion #1: MS-LS3-1, pp.53, 84-107 CTE S3, p.148 STEM Project Guide. Students are given many opportunities to use models (diagramming genetic inheritance in fruit flies, building DNA models with blocks, and DNA mutations caused by UV rays using UV beads and non UV beads) which help them begin to visualize how mutations in DNA can occur. However, the students are not given the opportunity to model the complete process and “describe why structural changes to genes located on chromosome may affect proteins.”
* Criterion #1: 8 MS-ESS1-4, pp.18-28 CTE S3. The text thoroughly addresses DCI ESS1.C for this PE, which states: “The geologic timescale interpreted from rock strata provides a way to organize Earth’s history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.” As required by MS-ESS1-4 students are not given the opportunity to construct a scientific explanation appropriate for grade 8 students as described in the SEP progression of the framework.
* Criterion #2: Grades K-8. The following is an example that resources do not develop mastery of the three integrated dimensions of the CA NGSS. Grade 1, p.66 CTE S2. Grade 4, p.68 SE S2.
* Criterion #3: Grades K-8. The following are examples that instructional resources do not reflect the full content of the CA Science Framework: Grade 7, p.70 CTE S3; Crosscutting Concepts Digital Library. Resources do not allow teachers to engage students in using each of the SEPs in multiple contexts, and the resources do not apply the CCCs to connect ideas across science topics.
* Criterion #4: Grades K-8. The following is an example that instructional resources do not progressively build students’ abilities to meet all grade level performance expectations through a three-dimensional instructional sequence: Grade K, p.90 CTE S1.
* Criterion #10: Grades K-8, Nest Family Cartoons–Engineers and Scientists. The curriculum does not contain diverse examples of notable scientists and engineers.
* Criterion #11: Grades K-8. The following are examples that resources do not include examples of different demographic groups who used their context, learning, and intelligence to make important contributions to society through science and technology: Nest Family Cartoons–Engineers and Scientists and Grade 6, p.10 CTE S1.
* Criterion #20: Grades K-8. The following is an example that instructional resources do not include opportunities for reflection on the nature of science: Grade 2, pp.77-96 CTE S2.

## Criteria Category 2: Program Organization

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

**Citations:**

* Criterion #3: Grade 2, p.13 CTE S2; Grade 4, p.266 CTE S4. 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 #5: Grade 1, pp.184-194 CTE S4; Grade 4, pp.350-366 CTE S4. These are examples of 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.
* Criterion #9: K-8 STEM Videos; Grade 2, p.37 SE S1. Resources encourage the meaningful use of technologies such as videos or computer simulations to investigate phenomena that cannot be directly experienced in the classroom; effective measuring tools (computer-linked thermometer or range-finder, digital scales, etc.); and spreadsheets and other software to record, display, and analyze data, etc. In these contexts, the materials support teachers as they introduce students to computational thinking and provide guidance to teachers on how science instruction may be improved by the effective use of library media centers and information literacy skills.
* Criterion #12: Grade 1, p.44 NS S2; Grade 6, pp.40-41 CTE S1. These are examples of ancillary and support resources 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 K, Rubric pp.XIII-XIV CTE. 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, pp.1-8 CTE S3. Grade two is an example 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 4, pp.11-23 CTE S2. Grade four is an example 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 8, pp.32-34 CTE S4. Grade eight is a good example of a summative assessment designed to provide valid, reliable, 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, and multiple choice tests.

## 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 #1: Grades K-8. The following are examples that instructional resources do not reflect the goals of access and equity outlined in chapter 10 of the CA Science Framework: Grade 2, S1; Grade 5, S4. In both the second and fifth grade texts cited above, the overwhelming majority of students depicted are white, and all scientists depicted are males, while the teachers are nearly all female. In neither text was there mention of scaffolding for or materials to support ethnically diverse learners, students living in poverty, foster youth, or students with disabilities.
* Criterion #1: Grades K-8. The following is an example that instructional resources do not reflect the goals of access and equity outlined in chapter 10 of the CA Science Framework: Grade 1, pp.14-15 CTE S3. There is no mention of non-standard English spoken by English only students (namely African American Vernacular English, and Chicana/Chicano English as outlined in chapter 10 of the CA Science Framework) or any strategies or scaffolds for assisting these students in developing science specific vocabulary.
* Criterion #1: Grades K-8. The following is an example that instructional resources do not reflect the goals of access and equity outlined in chapter 10 of the CA Science Framework: Grade 8, pp.256-257 CTE S3. There are no modifications, accommodations, or any resources for special needs students, students in poverty, foster youth, migrant students, or long-term English learners.
* Criterion #2: Grades K-8. The following is an example that at no grade level are there suggested lessons and teacher resources that include research-based strategies to address the needs of English learners consistent with the CA ELD Standards: Grade 5, p.91 CTE S2. There is no differentiation in the curriculum for proficiency levels of English learners or long-term English learners.
* Criterion #2: Grades K-8. The following is an example that at no grade level are there suggested lessons and teacher resources that include research-based strategies to address the needs of English learners consistent with the CA ELD Standards: Grade 1, p.125 CTE S4. There are no research-based strategies for addressing the needs of English learners. The program EL strategies include “speaking slowly” and “having wait times after asking a question,” which are not strategies listed in the CA ELD Standards that call for supporting the acquisition of science-related academic vocabulary.
* Criterion #3: Grades K-8. The following are examples that instructional resources do not incorporate instructional strategies to address the needs of students with disabilities in lessons, assessments, and teacher resources, as appropriate, at every grade level: Grade 1, pp.3-11 CTE S4; Grade 8, pp.200-207 CTE S3. Teacher Editions make no mention of students with disabilities, nor do they provide resources for assisting these students.
* Criterion #4: Grades K-8. The following is an example that teacher resources do not supply a differentiated path for all students: Grade 2, p.17 CTE S4. There are no resources for providing guidance for students living in poverty or foster care, who tend to lack engagement, as referenced in the CA Science Framework, chapter 10.
* Criterion #4: Grades K-8. The following are examples of teacher resources do not supply a differentiated path for all students: Grade 1, pp.41, 73, 99 CTE S3. There are no resources for engaging girls or young women I science, as is made a priority in chapter 10 of the CA Science Framework. On page 41, a woman is seen working on crafts. On page 73, a woman is sitting and looking confused. On page 99 there is a group of students with 2 boys looking happy and confident and 3 girls who all appear confused and unhappy.

## 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: Grade 4, pp.82-83 CTE S3. 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 #7: Grade 7, pp.29-32 CTE S2, referencing pp.11-14 SE S2. Teacher and student resources have correlating page numbers in print resources or corresponding references in electronic resources.
* Criterion #10: Grade 6, p.103 CTE S2 and p.58 SE S2. While learning goals may be explicitly stated in the teacher materials student resources will provide experiences that clearly build to the development of those learning goals without explicitly stating those goals prior to the instruction. In most cases prior to instruction, introduce a phenomenon or guiding question or the end result of the lesson series.
* Criterion #12: Grade 2, p.172 CTE S2. 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).

## Edits and Corrections:

The panel recommends the following edits and corrections: None

## 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 | L. 1. | 8 | Stem Guide | 223 | Lego | Building Bricks | Brand names and corporate logos |
| 2 | L. 1. | 8 | Stem Guide | 223 | Zip Lock Bags | Resealable plastic bags | Brand names and corporate logos |
| 3 | L. 1. | 8 | Stem Guide | 32 | Hot Wheels Cars | Metal toy car | Brand names and corporate logos |
| 4 | L. 1. | 8 | Stem Guide | 32 | Graphic Calc TI 82/82 | Graphing Calculator | Brand names and corporate logos |
| 5 | L. 1. | 8 | Stem Guide | 122, 137 | Popsicle Sticks | Wood craft sticks | Brand names and corporate logos |
| 6 | L.1. | 8 | SE S3 and multiple instances for both | 35  108  32 | Model Magic Clay  Play-Doh | Baking soda clay  Salt dough | Brand names and corporate logos |
| 7 | L.1. | 7 | SE S4 and multiple instances | 166 | Elmer’s Glue | White glue or white school glue | Brand names and corporate logos |
| 8 | L.1. | 7 | TE S3  SE S3 | 224  138 | iPod | Digital audio player | Brand names and corporate logos |
| 9 | L.1. | 7 | STEM Project Guide | 96 | Frisbee  Nerf Ball  Super Glue | Plastic disc toy  Sponge ball  Permanent glue | Brand names and corporate logos |
| 10 | L.1. | 7 | SE S2 | 134 | Alka-Seltzer Tablets | Fizzy antacid tablets | Brand names and corporate logos |
| 11 | L.1. | 7 | SE S1 | 91 | PowerPoint | Slide presentation | Brand names and corporate logos |
| 12 | L.1. | 7 | STEM Project Guide and various instances | 56 | AAA American Automobile Association | Insurance Company or other vendor | Brand names and corporate logos |
| 13 | L.1. | 7 | STEM Project Guide | 261 | Alka-Seltzer | Fizzy antacid  tablet | Brand names and corporate logos |
| 14 | L.1. | 7 | STEM Project Guide | 261 | Tums Tablet | Chalky antacid tablet | Brand names and corporate logos |
| 15 | L.1. | 7 | STEM Project Guide and various instances | 326 | Sim City 2000 | Video game simulating cities | Brand names and corporate logos |
| 16 | L.1. | 6 | STEM Project Guide | 32 | Coke  Diet Coke | Cola  Diet cola | Brand names and corporate logos |
| 17 | L.1. | 6 | SE S3 | 86 | Candy Nerds | Small pebble-shaped candy | Brand names and corporate logos |
| 18 | L.1. | 5 | SE S1, S4 and various instances | 10  39 | Scotch Tape | Cellophane tape | Brand names and corporate logos |
| 19 | B.1. | 6 | SE S1 | 76 | African American boy with baggy pants | Very few pictures of African American children; both clip art depictions have baggy pants | Adverse Reflection of African American students. |
| 20 | B.1. | 8 | SE S1 | 84 | African American girl with baggy pants | Very few pictures of African American children; both clip art depictions have baggy pants | Adverse Reflection of African American students. |
| 21 | B.1. | 2 | Supplemental Reader Poetry in Motion | 23 | Depiction of Asian boy | Choose a picture that is not demeaning | Adverse Reflection of Asian American students. |
| 22 | B.1. | 7 | SE S3  SE S4 | 209  171 | Same picture of man of color in an oil field | Choose a picture that is not demeaning | Adverse reflection of man of color |

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