**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 into NGSS K-8 | K–8i |

## Program Summary:

Steam into NGSS K-8 includes: STEAM into NGSS 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); Science Maker Assessments (CSM).

## Recommendation:

Steam into NGSS K-8 is not recommended for adoption for K–8i 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.

## 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.

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### Citations:

* Criterion #1.1: Standards Not Met:
  + Grade K PE K-LS1-1, CTE Segment 1 p.66. While the students are making observations, the materials did not have students making observations to describe patterns, a component of the Science and Engineering Practice and the Cross Cutting Concept.
  + Grade K PE ESS2-2, VG Segment 2 p.1-1 and CCD. The program does not have the students discuss what a system is. In the CCD the photo examples of systems are not related to the Performance Expectation.
  + Grade K PE ESS3-2, 1-7 VG Segment 3 pp.211-216; CTE Segment 3 pp.136-139; CSE Segment 3 pp.224-235; WW Segment 3 pp.146-152; WW SE Segment 3 pp.243-245; AR Segment 3 pp.156-157; AR SE Segment 3 pp.250-254; and CSM Segment 3. Materials do not show that people question the natural world everyday as a component of the Cross Cutting Concept (CCC).
  + Grade 1, PE 1-PS4-1, TE Segment 2 pp.194-200. The grade one activities did not have students plan the investigation. They did conduct the investigation but part of the performance expectation requires grade one students to plan the investigation.
  + Grade 1, PE 1-PS4-3, TE Segment 2 pp.233-241. The grade one activities did not require students to plan the investigation. The students conducted the investigation as directed from the teacher but students did not take part in the planning process as required by the performance expectation.
  + Grade 1, PE K-2-ETS1-3, TE Segment 4 pp.157-181. Students were expected to analyze data from tests of two objects designed to solve the same problem but the program only required the students to analyze one.
  + Grade 2, PE 2-LS2-1, TE pp.59-67. Students did not plan and conduct the investigation; they only brainstormed ideas and followed directions.
  + Grade 2, PE K-2-ETS1-1, TE pp.252-259. Students do not gather information about a situation people want to change in order to define the problem.
  + Grade 3, PE 3-LS1-1, TE Segment 2 pp.11-26. While students did develop a model as addressed in the PE, it did not require students to develop a model to address a phenomenon.
  + Grade 3, PE 3-LS4-1, TE Segment 3 pp.203-215. Students were given some images of fossils and scientists studying fossils but the program did not provide experiences for students to analyze and interpret that fossils existed from environments in which they lived long ago.
  + Grade 3, PE 3-PS2-4, TE Segment 1 pp.228-232, p.241. Experiences provided by the publisher did not address the Crosscutting Concept Connections to Engineering, Technology, and Applications of Science where science discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.
  + Grade 3, PE 3-5-ETS1-3, TE Segment 4 pp.191-199, pp.200-209, pp.299-332. Students were not prompted nor asked to plan the fair tests as indicated in the PE. Students only carried out a test per teacher’s directions.
  + Grade 4, PE 4-LS1-1, TE Segment 5 pp.1-9. There were no instances where students were constructing an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction a component of the performance expectation.
  + Grade 4, PE 4-LS1-2, TE Segment 5 pp.1-9. We found no evidence that students were using a model to test interactions concerning the functioning of a natural system, a component of the Science and Engineering Practice (SEP).
  + Grade 4, PE 4-ESS2-2, TE Segment 4 pp.5-6. In all activities we found no evidence that students discussed patterns as evidence to support an explanation, a component of the Cross Cutting Concept (CCC).
  + Grade 4, PE 4-ESS3-1, TPE/SPE Segment 3 pp.20-25/pp.9-14. We found no evidence in all activities that cause and effect relationships are routinely identified and used to explain change, or that reliable media is used to explain phenomena components of the Cross Cutting Concept (CCC) and the Science and Engineering Practice (SEP).
  + Grade 4, PE 4-ESS3-2, TPE Segment 3 pp.101-114. We found no evidence that students generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution, a component of the Science and Engineering Practice.
  + Grade 4, PE 4-PS3-1, TPE Segment 5 pp.167-185. We found that the activities focused on force and electrical circuitry rather than energy and energy transfer, components of the Disciplinary Core Idea and Cross Cutting Concept.
  + Grade 4, PE 4-PS3-3, TPE Segment 5 pp.167-185. We found no evidence that students were asking questions, a component of the Science and Engineering Practice (SEP).
  + Grade 4, PE 4-PS3-4, TPE Segment 5 pp.255-257. We found no evidence that students solve design problems, understand that energy can be transferred in various ways and between objects, and engineers improve existing technologies or develop new ones components of the Science and Engineering Practice (SEP) and the Cross Cutting Concept (CCC).
  + Grade 4, PE 4-PS4-1, TPE Segment 3 pp.101-114. We found no evidence that students develop their own models, understand that science findings are based on recognizing patterns, and know that similarities and differences in patterns can be used to sort, classify and analyze simple rates of change for natural phenomena, components of the Science and Engineering Practices and the Cross Cutting Concepts.
  + Grade 4, PE 4-PS4-2, TE Segment 5 pp.1-9. We found no evidence in all activities that students develop a model to describe phenomena or identify cause and effect relationships, components of the Science and Engineering Practice (SEP) and the Cross Cutting Concept (CCC).
  + Grade 4, PE 4-PS4-3, TE Segment 5 pp.1-9. We found no evidence that students generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution, understand that similarities and differences in patterns can be used to sort and classify designed products, and know that relevant scientific concepts and research findings are important in engineering, components of the Science and Engineering Practice (SEP) and the Cross Cutting Concept (CCC).
  + Grade 4, PE 3-5 ETS1-2, CTE Segment 4 pp.315-338. In grade 4 materials we found no evidence that students understand that Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands, a component of the Cross Cutting Concept (CCC).
  + Grade 5, PE 5-LS1-1, TE Segment 2 pp.10-30. Students constructed an argument but did not support the argument with evidence, data, or a model as stated in the Science and Engineering Practice (SEP).
  + Grade 5, PE 5-LS2-1, TE Segment 2 pp.79-99. Students developed a model of a food web but the model developed did not describe a phenomenon as shared in the Science and Engineering Practice (SEP).
  + Grade 5, PE 5-ESS3-1, TE Segment 3 pp.143-164. The program did not address for teachers the Crosscutting Concept Connections to Nature of Science where science findings are limited to questions that can be answered with empirical evidence.
  + Grade 5, PE 5-PS3-1, TE Segment 2 pp.172-194. Students developed a model of a food web but the model developed did not describe a phenomenon as shared in the Science and Engineering Practice (SEP).
  + Grade 6, PE MS-LS1-3, TE Segment 1 pp.105-138. Students did not use evidence to support or refute an explanation or a model for a phenomenon with a missing phenomenon in their use of an argument.
  + Grade 6, PE MS-LS3-2, TE Segment 3 pp.345-382. No phenomenon was introduced to students so that they could ultimately develop and use a model to describe it.
  + Grade 6, PE MS-ESS2-6, TE Segment 1 pp.259-304. Students were never asked to develop and use a model to describe the phenomenon.
  + Grade 6, PE MS-ESS3-5, TE Segment 4 pp.78-113. Teachers asked the questions. Students were supposed to be asking the questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century, which they were never asked to do.
  + Grade 6, PE MS-ETS1-4, TE Segment 2 pp.113-125. The model that students were asked to develop did not include inputs or outputs as indicated in the Science and Engineering Practice (SEP).
  + Grade 7, PE MS-LS1-7, SIAV TE Segment 2 pp.55-63. Did not meet the standard due to students not building a model of food molecule, an integral part of the Performance Expectation (PE).
  + Grade 7, PE MS-LS2-2, CTE Segment 3 pp.66-89. Although the Disciplinary Core Idea (DCI) was met, there is not sufficient evidence for students to use patterns to identify cause and effect relationships, a part of the Cross-cutting Concept (CCC).
  + Grade 7, PE MS-LS2-5, NS SE Segment 4 pp.57-58. This activity does not provide criteria that needs to be followed or accomplished by students for the project. The problem is well defined, but the constraints were not given, as required by the Disciplinary Core Idea (DCI).
  + Grade 7, PE MS-ESS2-1, SIAV TE Segment 2 pp.106-114. Provided students the opportunity to observe the phenomenon, but students were not granted the chance to develop model. This does not accomplish the PE to develop and use a model.
  + Grade 7, PE MS-ESS3-1, CSE Segment 1 pp.352-371. Students did not develop an explanation to explain their finding of uneven mineral distribution, an integral part of the Science and Engineering Practices (SEP).
  + Grade 7, PE MS-PS1-2, SIAV TE Segment 2 pp.161-164. The activity fulfills the DCI, but the cross cutting concept of macroscopic patterns as related to the nature of microscopic and atomic-level structure is not present.
  + Grade 7, PE MS-PS1-3, CSE Segment 1 pp.78-94. The assignment of researching synthetic materials did not connect to the Science and Engineering Practices (SEP); students did not have the opportunity to Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describe how they are supported or not supported.
  + Grade 7, PE MS-PS1-5. SIAV TE Segment 2 pp.213-218. The Conservation of Matter activity does not accomplish the Science and Engineering Practice (SEP) of students developing a model to describe the chemical reactions.
  + Grade 7, PE MS-PS1-6, SIAV TE Segment 2 pp.257-266. The activity provides an opportunity to have students observe chemical reactions. Students did not have the opportunity to modify their design solution as described in the Disciplinary Core Idea (DCI).
  + Grade 7, PE MS-ETS1-4. CSE Segment 4 pp.199-208. The activity call for students to develop a model, but the inputs and outputs are not specified within the projects as required in the Science and Engineering Practices (SEPs).
  + Grade 8, PE MS-LS3-1, TPE Segment 3 pp.70-124. Students do not develop a model to describe why structural changes on chromosomes may affect proteins and may result in harmful, beneficial or neutral effects to the structure and function of the organism.
  + Grade 8, PE MS-LS4-1, TPE Segment 3 pp.129-165. There is no data introduced that allows students to analyze and interpret patterns in the fossil record that document the existence, diversity, extinction and change of life forms.
  + Grade 8, PE MS-ESS1-1, TPE Segment 2 pp.21-49. While this segment does have students model the phases of the moon, per the science practice, it does not have them make sense of the seasons through modeling, but rather provides the explanation that the earth has an axis and then has students show how that creates the seasons.
  + Grade 8, PE MS-ESS1-2, TPE Segment 2 pp.76-11. The PE requires that students develop and use a model to describe the role of gravity.  Students are told much information about gravity in this segment, but are not asked to make sense of it through the development of a model.
  + Grade 8, PE MS-ESS1-4, TPE Segment 3 pp.17-63. Students are not asked to construct a scientific explanation based on evidence from rock strata for how the geological time scale is used to organize earth’s history.
  + Grade 8, PE MS-PS2-2 SE Segment 1 pp.85-123. Students are not asked to plan an investigation to provide evidence of how net forces work and so does not meet the Science Practice outlined in the PE.
  + Grade 8, PE MS-PS2-3, TPE Segment 2 pp.175-207. Students are not prompted to ask questions around the phenomena of electric and magnetic forces in order to determine the factors that affect their strengths, as the scientific practice identified in the PE dictates.
  + Grade 8, PE MS-PS2-4, TPE Segment 2 pp.209-254. Students are not asked to construct an argument, per the scientific practice in the PE, to support the claim that gravitational force is attractive and proportional to the mass of the two objects involved.
  + Grade 8, PE MS-PS3-1, SE Segment 1 pp.142-170. Students are not asked to construct graphs from data relating kinetic energy to speed in order to describe the relationship per the performance expectation.
  + Grade 8, PE MS-PS3-2, SE Segment 1 pp.130-141. While students engage in a number of activities around how potential energy changes with gravitational distance, they are not asked to develop a model that generalizes these findings, per the Science Practice identified in the PE.
  + Grade 8, PE MS-PS4-1, CTE Segment 4 pp.22-65. Students do not use a mathematical representation to describe the relationship of the amplitude of a wave to its energy, which is the performance expectation.
  + Grade 8, PE MS-PS4-2, CTE Segment 4 pp.71-123. While the investigations into the properties of light are strong, students are not asked to develop a model showing that behavior, per the Science Practice in the PE.
  + Grade 8, PE MS-PS4-3, CTE Segment 4 pp.133-161. Students are not asked to compare the reliability of digital vs. analog waves, and why, but rather are asked which is ‘better’. The Performance Expectation demands students must state why a particular wave is reliable, not ‘better’.
  + Grade 8, PE MS-ETS1-2, CTE Segment 4 pp.369-394. We did not find evidence that students engaged in the evaluation of their design criteria or in analyzing that criteria.
  + Grade 8, PE MS-ETS1-3, CTE Segment 4 pp.369-394. We found no evidence that students were engaged in structured analysis of data from tests in their designs and then combining those criteria into new and improved designs.
* Criterion #1.2: Grade K, TPE 14-22 and Grade 1, TE Segment 2 pp.80-93. Instructional resources did not engage the students in all three dimensions through text, discourse, and experiential learning.
* Criterion #1.3: Grade 3, TE Segment 4 pp.1-9. We did not find that instructional resources reflected the full content of the science and engineering practice or the cross-cutting concepts at any grade level, and so resulted in a number of standards not being met.
* Criterion #1.4: Grade 7, WW SE Segment 3 pp.52-53. Instructional resources do not progressively build students’ abilities to meet all grade level performance expectations as evidenced by grade level performance expectations not being met.
* Criterion #1.5: Grade K, TE Segment 3 pp.1-7 and Grade 5, Segment 3 TE pp.1-8. No evidence was found that teacher resources support instructional opportunities and assessments that engage students in three-dimensional learning.
* Criterion #1.11: Grades K-8, CCD - SCIENTIST FACT SHEETS. We did not find that the materials include examples of people and groups who used their context, learning, and intelligence to make important contributions to society through science and technology from different demographic groups.
* Criterion #1.14: Grade 1, TE Segment 1 p.99 and Grade 5, TE Segment 2 p.126. Teacher resources did not provide guidance to support all students.
* Criterion #1.20: Grades K-8, Alaska. We did not find evidence throughout the materials that 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 #2.11: Grade 3, Vignette S4 pp.1-9 and Grade 7, Vignette TE pp.3-14. The materials include teacher resources to where supplemental resources may be found.

## 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 #3.9: Grade 2, TE pp.285-286 and Grade 5, TE pp.245-246. Grades 2 and 5 are good examples of how resources include rubrics for scoring performance tasks.
* Criterion #3.10: Grade 4, SE (3) p.108, pp.109-112, p.164. These materials show examples of assessment tools that use multiple measures such as open-ended questions (p.108), performance-based tasks (pp.109-112), and short answer responses (p.164).

## 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 #4.3: Grades K-8, STEAM Project Library. The components of the STEAM Project Library addresses the needs of students with disabilities.

## 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 #5.6: Grades 6, TPE pp.26-28. Material provides an example of guidance for the teacher on how to implement a classroom activity.
* Criterion #5.18: Grades 3-5, PG pp.1-161; Grades 6-8, PG pp.1-64; and IS-TPS Report Card. We found evidence in all grades where the parent guides can be used to inform families about the CA NGSS and student progress.
* Criterion #5.19: Grades K-8, Digital Frog; Grades K-8, Alaska K-8; and Grades K-8, Nest Family Movies. We found evidence in all grades where resources provide teachers with instructions on how outside resources 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 | 6 | SE Segment 2 | 161 | No punctuation on question 4 and 5. | Add the punctuation. | Grammatical error or misspelling |
| 2 | 3 | VG Segment 1 | 4 | acalf | a calf | Grammatical error or misspelling |
| 3 | 8 | TE Segment 3 | 28 | If you have are looking… | If you are looking… | Grammatical error or misspelling |

California Department of Education, August 2018

## 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 | A.2. | 5 | Example provided uses  Grade 5 Segment 2 but this is seen across all grades. | xi, 73, 163-166, 217-219, 290-293 | Repeated clip art of older white male scientist | Depict a diverse range of scientists. | Reinforces stereotypes of male scientists |
| 2 | L.1. | 3 | WordWall Segment 4 | 143 | Activity requires Monopoly-style houses | Remove Monopoly name and replace with miniature house figures. | Brand names and corporate logos |
| 3 | A.1.  A.2. | 3 | WordWall  Segment 2 | 90 | States “Both the boys were really good at math, but that was because they had learned those skills from both parents.” and the picture is of a family with female members. | Replace “boys” with “children.” | Equal portrayal is lacking and adverse reflection of female scientists. |
| 4 | G.3. | K | SE Segment 1 | 59 | First, daddy says Grace. | Eliminate the sentence. | Grace does not reflect religious diversity. |