### Component

**F1. Presence of Phenomena / Problems.**

### Strengths

The materials include phenomena/problems:
- that have the potential to drive student learning.
- have the potential to relate across the dimensions.

**Unit Pages:** The Unit Page provides teachers and students direct access to Anchor Phenomena for the unit, as well as Investigative Phenomena for each concept found within the unit. The Unit pages are available both in print and digital, and include additional support for teachers, in the Teacher Guide, on how to launch the anchor phenomenon with students. The anchor phenomenon provides students with real-world instances of phenomena, which serve as the context for the unit project. Students communicate their initial ideas, related to the unit project, before engaging with the investigative phenomena in each concept. Investigative phenomena are carefully selected to elicit student scientific questions. As students move through the learning progression, students apply three-dimensional thinking to communicate their ideas about both the anchor phenomenon and each investigative phenomenon, with the intent of constructing explanations to their own questions.

### Citations

**Grade 2: Unit 2: Materials from the Land**

**Unit Page:**

<table>
<thead>
<tr>
<th>Print</th>
<th>Digital</th>
</tr>
</thead>
</table>
| TE Pages | Anchor Phenomenon:
Launch: p. 14 | SE Pages | Anchor Phenomenon: p. 2-3 |

Enter Quick Code: ca2250s
### Component

| F1. Presence of Phenomena / Problems. |

### Strengths

<table>
<thead>
<tr>
<th>Examples</th>
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</thead>
<tbody>
<tr>
<td><strong>Grade 2 Unit 2</strong></td>
</tr>
</tbody>
</table>

#### Unit Level Alignment:

In this unit, students explore different materials and discover that properties of materials often define how the materials are used. Students begin by thinking about the materials that the three little pigs used to build their houses. Throughout the unit they explore natural and human-made materials and investigate how these materials can be changed, and whether or not the changes can be reversed. They build upon their understanding by investigating various objects that are made with small parts that can be disassembled and reassembled to serve a different function. Students view videos, images, and simulations, and conduct hands-on investigations by first predicting how materials change. Students conduct hands-on engineering activities by first asking questions about designing solutions. At the conclusion of the unit, students take apart an object, observe how its parts work together, and design an object that performs a similar function using recycled or reused materials.

#### Investigative Phenomenon Examples:

**2nd Grade: Unit 2**

- **Concept 1: Material Properties:** Students will use observations from media and ask questions to find out more about the designed houses of the three pigs.

- **Concept 2: Changing Materials:** Students ask questions and make observations to compare the multiple solutions to the problem the three little pigs had in building their houses.

### Citations

#### Investigative Phenomenon Examples:

**Print:**

<table>
<thead>
<tr>
<th>TE Pages</th>
<th>SE Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept 2.1: Build a House: p. 32-33</td>
<td>Concept 2.1: Build a House: p. 10-11</td>
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</tbody>
</table>

**Digital:**

- Concept 2.1: Build a House: Enter Quick Code: ca2258s
### Component

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1. Presence of Phenomena / Problems.</td>
<td>Concept 3: Materials in Design: Students make observations from media that can be used to make comparisons about how the properties of different materials function when used to build a structure.</td>
<td>Phenomenon-Based Unit Assessments: Grade 2: Unit 2: Students apply the SEPs developed through the Unit to engage in a three dimensional Performance Based Assessment in which students will choose the best materials. They take apart an object, observe how its parts work together, and design an object that performs a similar function using recycled or reused materials. Students will compare strengths of different materials and describe how these materials are suited for their purpose.</td>
</tr>
</tbody>
</table>

Phenomenon-Based Unit Assessments:

**Grade 2: Unit 2: Students apply the SEPs developed through the Unit to engage in a three dimensional Performance Based Assessment in which students will choose the best materials. They take apart an object, observe how its parts work together, and design an object that performs a similar function using recycled or reused materials. Students will compare strengths of different materials and describe how these materials are suited for their purpose.**
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| F2. Presence of Three Dimensions.      | The materials include the three dimensions, such that:                                                                                                                             | Course Level Alignments:  
  https://tinyurl.com/unbld84                                                                                                                                                                                                                       |
|                                        |  - the DCIs, SEPs, and CCCs are present and have the potential to support student learning.                                                                                 | Grade 2: Unit 2: Materials from the Land  
  - Unit Page                                                                                                                                                                                                                                             |
|                                        |  - when engineering design is a learning focus, it is integrated with the appropriate dimensions (i.e., engineering is not isolated).                                                                                   | Print:  
  |                                        | Each concept has a multitude of resources and materials to support learning of the DCIs, SEPs and CCCs. Specific examples of California Science Techbook assets include, but are not limited to: | Grade 2, Vol 1, Scope & Sequence overview:  
  p. xxxviii-xl
  Unit 2: p. 1
  Three Dimensions p. 3 |
|                                        | Course Level Alignment:  
  The course level development of the Performance Expectations, including the DCIs, SEPs, and CCCs can be found in the Next Generation Science Standards and Three Dimensions at a Glance pages within the Scope & Sequence area of the print Teacher’s Edition. |                                                                                                     |
### Unit Level Alignment:

Unit level three dimensional expectations include the Unit project, tied to the Unit Anchor Phenomenon, as well as the Summative Performance Based Assessment (PBA). In the unit project, students will demonstrate the SEPs and CCCs to apply their newly acquired DCIs for the unit to both science and engineering-based problems and scenarios. The three-dimensional PBA expects students to apply the ideas of the unit to a new storyline, in order to demonstrate transfer of learning. A teacher guide for the PBA outlines the evidence students demonstrate across the three dimensions.

Example: Grade 2: Unit 2: Materials from the Land: Students are introduced to the Anchor Phenomenon, in video format, students explore different materials and discover that properties of materials often define how the materials are used. Students begin by thinking about the materials that the three little pigs used to build their houses. Throughout the unit they explore natural and human-made materials and investigate how these materials can be changed, and whether or not the changes can be reversed. They build upon their understanding by investigating various objects that are made with small parts that can be disassembled and reassembled to serve a different function. Students view videos, images, and simulations, and also conduct hands-on investigations by first predicting how materials change. Students conduct hands-on engineering activities by first asking questions about designing solutions. At the conclusion of the unit, students take apart an object, observe how its parts work together, and design an object that performs a similar function.

<table>
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<tr>
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</table>
| F2. Presence of Three Dimensions. | **Unit Level Alignment:** Unit level three dimensional expectations include the Unit project, tied to the Unit Anchor Phenomenon, as well as the Summative Performance Based Assessment (PBA). In the unit project, students will demonstrate the SEPs and CCCs to apply their newly acquired DCIs for the unit to both science and engineering-based problems and scenarios. The three-dimensional PBA expects students to apply the ideas of the unit to a new storyline, in order to demonstrate transfer of learning. A teacher guide for the PBA outlines the evidence students demonstrate across the three dimensions. | **Unit Outline**

**Anchor Phenomenon: Get Started**
- Shaping the Landscape with Tech
- Students will learn about materials that shape our land, how different materials are described, and what happens when you use them, treat them, or cool them. In the end, students will use what they know about the properties of materials to design useful, eco-friendly objects.

**Unit Project Preview**
- Choosing the Best Materials
- Students will begin to think about an object they can design out of recycled or reused materials.

**Concepts**
- **Material Properties**
  - Students will learn about the different properties of materials.
- **Changing Materials**
  - Students will learn that while the properties of materials can be changed, some of these changes can be reversed while others cannot.

**Materials in Design**
- Students will learn how the properties of materials affect their use and can impact the environment.

**Unit Project Summative Assessment**
- Choosing the Best Materials
  - Students will take apart an object, observe how its parts work together, and design an object that performs a similar function using recycled or reused materials. Students will compare strengths of different materials and describe how these materials are suited for their purpose.
<table>
<thead>
<tr>
<th><strong>Component</strong></th>
<th><strong>Strengths</strong></th>
<th><strong>Citations</strong></th>
</tr>
</thead>
</table>
| **F2. Presence of Three Dimensions.** | Science and Engineering Practices are integrated as students use liquid glue to model and predict future impact of erosion on the Grand Canyon. | **Unit Project**

**Lava Flows and the Grand Canyon**
In this project, students have the opportunity to consider how volcanic activity affects the environment. Students propose hypotheses and consider models of how volcanic activity could have played a role in shaping the Grand Canyon. Students are presented with an image of the Grand Canyon taken from space. Students must predict what would happen if lava flows down the canyon walls into the canyon. They must then construct a model to predict what will happen to the Grand Canyon.

**Unit Performance-Based Assessment**

**Exploring Iceland’s Landscape**
In this activity, students are presented with text and graphic materials related to the diverse landforms present in a small but incredibly varied country, Iceland. After considering the volcanic activity of the island, students are asked to interpret maps and analyze photos to recognize the patterns related to the natural processes shaping Iceland’s surface and the natural hazards connected to them. Finally, students must apply their knowledge of the processes affecting the landscape and their reasoning skills to build a basic model of the rock cycle. |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| **F2. Presence of Three Dimensions.** | **Concept Level Alignment:**  
- Three-dimensional learning objectives drive the design and sequence of the activities within each concept  
- Teacher support for the alignment to the SEP and CCCs is included at the activity level:  
  - Bolded text highlights the specific dimension of the PE addressed during each activity  
  - Instructional Focus provides details on the element level of the SEP and CCC students will demonstrate at the completion of the activity  
  - NGSS call-outs highlight for both teachers and students the specific SEP and CCC being addressed within the activity  
  - Strategies to set up the learning environment for students to demonstrate the SEPs and CCCs related to the concept DCIs | **Digital:** Unit Page: Enter Quick Code: ca2250s  
**Concept Pages:**  
Within each concept, reference tagged activities in Learn and Share (Explore, Explain, and Elaborate) for additional evidence of three dimensions.  
**Print:**  
<table>
<thead>
<tr>
<th>TE Pages</th>
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</thead>
<tbody>
<tr>
<td>Concept 2.1: p 30</td>
<td>Concept 2.1: p 8</td>
</tr>
<tr>
<td>Concept 2.2: p 112</td>
<td>Concept 2.2: p 72</td>
</tr>
<tr>
<td>Concept 2.3: p 208</td>
<td>Concept 2.3: p 150</td>
</tr>
</tbody>
</table>

**Concepts and Standards**

<table>
<thead>
<tr>
<th>Concept 1: Local Landscapes</th>
<th>Progression of Three Dimensions</th>
</tr>
</thead>
</table>
| 2-ESS2-2 | Develop a model to represent the shapes and kinds of land and bodies of water in an area.  
2-ESS2-3 | Observe information to identify where water is found on Earth and that it can be solid or liquid. |
| Concept 2: Mapping Landscapes | |  
2-ESS2-2 | Develop a model to represent the shapes and kinds of land and bodies of water in an area.  
2-ESS2-3 | Observe information to identify where water is found on Earth and that it can be solid or liquid. |
| Concept 3: Land and Water Relationships | |  
2-ESS2-2 | Develop a model to represent the shapes and kinds of land and bodies of water in an area.  
2-ESS2-3 | Observe information to identify where water is found on Earth and that it can be solid or liquid. |

Enter Digital: Quick Codes on digital Course page to be taken directly to the pages  
- Concept 2.1: ca2255s  
- Concept 2.2: ca2304s  
- Concept 2.3: ca2367s
## F2. Presence of Three Dimensions.

### Strengths

- Pathways for Learning guidance provides options for students to meet the element level of the SEP and CCC in a variety of technology settings.

### Citations

- Teacher reflection questions encourage reflection on students' performance across the three dimensions.

### Investigative Phenomenon

**Activity 2**

**Ask Questions Like a Scientist**

**Build a House**

**NGSS Alignment**

2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

**Instructional Focus**

In this activity, students will use observations from media and ask questions to find out more about the designed houses of the three pigs.

**SEP** Planning and Carrying Out Investigations

**Strategy**

Show students the video Let's Investigate Build a House, Act One: The Three Little Pigs Build Their Houses. Discuss the materials that the pigs used to build their houses (straw, sticks, and bricks).
**F2. Presence of Three Dimensions.**

**Formative Assessment Items:**
Teachers have the opportunity to gather formative assessment data related to students’ progress of the three dimensions at various points within each concept.

- Technology Enhanced Items (TEIs) have been embedded throughout each concept to uncover what students know and allow students to demonstrate three-dimensional proficiency of the performance expectations. Student responses feed directly to the teacher dashboard, providing instant access to data to inform instruction and drive differentiation strategies. Each TEI has built-in scaffolded feedback for students.

- Summative Concept Assessments, focused on the DCIs, are found at the end of each concept. These assessments can be assigned to students, taken by students on their own as a practice test, or printed and given to students to complete as an assessment or an assignment. The results of these assessments are provided within the teacher dashboard. Teachers are able

<table>
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Print:

<table>
<thead>
<tr>
<th>TE Pages</th>
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</table>

Digital:

<p>| Concept 1.3: Size of Force: ca3079s |</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2. Presence of Three Dimensions.</td>
<td>to identify areas of strength and weakness and adjust pacing of instruction to achieve proficiency for all students. • Record Evidence activity expects students to analyze complex text and authentic data and evaluate information to support a student-generated claim to their own questions or the Can You Explain question for the concept. As students refine their scientific explanations throughout a course, they will refine their understanding of science content as well as their understanding of the nature of science. Students and teachers can review and provide feedback to one another to increase the rigor of the response throughout a concept, unit, or course. These activities have been scaffolded across a course to support students in achieving proficiency for the grade-band expectation. • Hands-On Activities (HOAs) provide opportunities for students to demonstrate the science and engineering practices and analyze data to look for evidence of cross-cutting concepts. Hands-On Activities contain student sheets that allow students to observe, predict, classify, communicate, and analyze materials and practices from science investigations.</td>
<td></td>
</tr>
</tbody>
</table>

**Size of Force**

**NGSS Alignment**

3-PS2-3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets.

**Instructional Focus**

In this activity, students organize data on the number of coils in an electromagnet and the number of paper clips picked up to reveal a pattern from which students infer a causal relationship.

**SEP** Using Mathematical and Computational Thinking

**CCC** Scale, Proportion, and Quantity

**Strategy**

Students will build the foundational knowledge that the force applied to an object depends on the distance between the object and the force applied and the quantity of the force applied.

- Provide students with a number line representing the number of paper clips an electromagnet is able to pick up.
- In your group, how many paper clips could your electromagnet pick up?
- As students respond, prompt them to also tell you the number of coils they had for their electromagnet.
<table>
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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<tbody>
<tr>
<td>F2. Presence of Three Dimensions.</td>
<td><img src="image.png" alt="Diagram" /></td>
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</tbody>
</table>
### Component


### Strengths

The materials include (as applicable):

- instructional content that incorporates the California EP&Cs.
- opportunities for students to examine the interactions and interdependence of human societies and natural systems.
- opportunities for students to develop and implement solutions to real-world environmental problems.

The Discovery Education Comprehensive Science Program includes varied resources that identify, include, and authentically align the instructional content to the California EP&Cs. See examples below:

### Course Level Alignment

**EP&C Map** demonstrates specific resources and activities within each course that target the California EP&Cs.

### Citations

**Grade 2: Unit 2: Materials from the Land**

Unit Page:

Print: Grade 2, Vol 1, Scope & Sequence overview: p. xxxviii-xlili

Digital: [https://tinyurl.com/unbld84](https://tinyurl.com/unbld84);
<table>
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</thead>
<tbody>
<tr>
<td>F3. Presence of Environmental Principles &amp; Concepts (EP&amp;Cs).</td>
<td><strong>Concept Level Content:</strong> Grade 2: Unit 2, Concept 2.1: Material Properties In this concept, students explore the lesson question in Learn, “How are materials alike and different?” Throughout this section, students have the opportunity to share their observations about materials and their properties and have them use these observations to describe patterns in the natural world. For instance, as students observe metals, they might ask themselves: Are all metals shiny? As they describe materials that make up the playground, students might ask themselves: Is the asphalt on the playground always hot, or does it feel cooler at different times throughout the day?</td>
<td></td>
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</tbody>
</table>

**Print**

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<thead>
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<tbody>
<tr>
<td>Concept 2.1 Learn p. 123-184</td>
<td>Concept 2.1 Learn p. 22-61</td>
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**Digital:** Quick Codes on Digital Course page to be taken directly to the pages.

- Concept 2.1: ca2266s
- [https://tinyurl.com/tb24x4s](https://tinyurl.com/tb24x4s)
<table>
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</table>
| F4. Presence of a Logical Sequence of Learning. | Materials demonstrate appropriate sequencing of three dimensions when:  
- they include a targeted set of DCIs, SEPs, and CCCs within a sequence; the sequence is clear and logical across the DCIs; and the SEPs and CCCs are potentially sufficient and appropriate for students to figure out the phenomena or problems.  
- phenomenon or problems are linked to each other.  
The three dimensions (SEP, DCI, CCC) are sequenced across each course and designed with scaffolds across the grade bands.  
**Unit Level Alignment:**  
Each unit in Grades K-5 aligns to the standard bundles found in the California Framework for Science.  
Example of building SEPs across the course:  
2nd Grade: Unit 2 - Materials from the Land | Course Level Alignments: https://tinyurl.com/y5xbkfvv  
**Grade 2: Unit 2**  
Unit Page:  
Print:  
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<tbody>
<tr>
<td>Grade 2, Unit 2, Scope &amp; Sequence overview: p. xxviii-xxxviii</td>
<td></td>
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<tr>
<td>Component</td>
<td>Strengths</td>
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<tr>
<td>F4. Presence of a Logical Sequence of Learning.</td>
<td><strong>Concept Level Sequence Examples:</strong> Students are introduced to grade appropriate, linked phenomena, that are developmentally scaffolded and in a logical sequence to facilitate engagement in the three dimensions to drive students toward the learning goals.</td>
</tr>
<tr>
<td></td>
<td>Unit 2: Concept 2.1: Material Properties: Throughout Explore, students complete a series of activities where they will observe and analyze materials that can be found where they live to determine what materials would be useful for building a house.</td>
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<tr>
<td></td>
<td>• In activity 7, students use media to observe a schoolyard to make predictions about materials used in their own schoolyard.</td>
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<td>• In activity 8, students make observations to collect data on the observable properties of schoolyard equipment and begin to make comparisons of the stability of structures in relations to their function.</td>
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<td></td>
<td>In activity 11, students analyze the house drawings that they made on Day 1, discuss their drawings with a partner, and make changes to their drawings based on their growing knowledge of materials. Students summarize their learning from the station activities and record their thoughts on the materials they would use to build a house.</td>
</tr>
<tr>
<td></td>
<td><strong>Unit Outline</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Anchor Phenomenon: Get Started</strong></td>
</tr>
<tr>
<td></td>
<td>Students will learn about materials that shape our land, how different materials are described, and what happens when you move them, how they find their own home. In this unit, students will use what they know about the properties of materials to design useful, and friendly objects.</td>
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<tr>
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<td><strong>Unit Project Prewiew</strong></td>
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<td>Choosing the Best Materials</td>
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<td></td>
<td>Students will begin to think about an object they can design out of recycled or reused materials.</td>
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<tr>
<td></td>
<td><strong>Concepts</strong></td>
</tr>
<tr>
<td></td>
<td>Material Properties</td>
</tr>
<tr>
<td></td>
<td>Students will learn about the different properties of materials.</td>
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<td>Changing Materials</td>
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<td>Students will learn that while the properties of materials can be changed, some of these changes can be reversed while others cannot.</td>
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<td></td>
<td><strong>Unit Project Summative Assessment</strong></td>
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<tr>
<td></td>
<td>Choosing the Best Materials</td>
</tr>
<tr>
<td></td>
<td>In this activity, students will take apart an object, observe how its parts work together, and design an object that performs a similar function using recycled or reused materials. Students will summarize their knowledge of different materials and identify how these materials are used for their product.</td>
</tr>
<tr>
<td></td>
<td><strong>Concept Pages:</strong></td>
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<tr>
<td></td>
<td>Within each concept, reference tagged activities in Learn and Share (Explore, Explain, and Elaborate) for additional evidence of three dimensions. Print:</td>
</tr>
<tr>
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<td><strong>TE Pages</strong></td>
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<tr>
<td></td>
<td>Concept 2.1</td>
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<tr>
<td></td>
<td>Activity 7: p. 45</td>
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<td></td>
<td>Activity 8: p. 47</td>
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<td>Activity 11: p 56</td>
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<td>Component</td>
<td>Strengths</td>
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</table>
| F4. Presence of a Logical Sequence of Learning. | | Digital Quick Codes: Concept 2.1  
Activity 7: ca2266s  
Activity 8: ca2268s  
Activity 11: ca2274s |

Activity 7: Observe Like a Scientist
- **Schoolyard Landscape Visual:** 5 mins
- **Student Edition Pages:** 20-23

Activity 8: Think Like a Scientist
- **Materials in the Schoolyard Landscape:** Visual (8 mins)
- **Student Edition Pages:** 24-26

Activity 11: Analyze Like a Scientist
- **Different Landscape Materials:** Visual (20 mins)
- **Student Edition Pages:** 52-53
## Designed for CA NGSS: Monitoring Student Progress

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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</thead>
</table>
| SP1. Quality of supports for monitoring 3D learning and EP&Cs integration. | Assessments are designed to:  
  - ensure that students use SEPs integrated with DCIs and CCCs to demonstrate their understanding of phenomena and/or design solutions to problems.  
  - connect student learning experiences to the targeted learning goals.  
  - elicit observable evidence of students’ knowledge of and ability to use grade-level-appropriate elements of the three dimensions.  
  - ensure that students use EP&Cs where applicable to demonstrate their understanding of environmental phenomenon/problem solution. | Student Work Tagged by SEP and CCC throughout the Wonder, Learn and Share instructional activities for both Teacher and Student:  
Grade 2: Unit 2: Materials from the Land  
- Print  
  - TE: Pages 2-3  
- Digital: Learn Tab:  
  [https://tinyurl.com/yx5yppky](https://tinyurl.com/yx5yppky)  
  
EP&C’s and 3-Dimensional Learning  
- [https://tinyurl.com/unbld84](https://tinyurl.com/unbld84)  
  
Technology Enhanced Item examples  
- Concept 2.1 Material Properties:  
  - Digital: Activity 6; Evaluate Like a Scientist; Quick Code ca2264s  
  - Digital: Activity 19; Evaluate Like a Scientist; Quick Code ca2287s |
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<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP1. Quality of supports for monitoring 3D learning and EP&Cs integration.| **Unit Level Alignment:**
  **Performance-Based Assessments (PBA):**
  Students demonstrate three-dimensional learning through multiple three-dimensional prompts associated with a common scenario. Teacher Guides for each PBA describe the multidimensional nature of each item and provide sample student responses.

  **Concept Level Alignment:**
  **Teacher Dashboard: Real Time Data & Differentiation**
  Each activity is tagged by SEP and CCC designations for both the teacher and the student to help them focus on the evidence of the dimension within the activity.

  Throughout the learning progression, each tab of each concept includes Technology Enhanced Items that have students connect to what they already know about the topic (Wonder), and then as they progress, to monitor what they do learn as they explore and learn through a variety of multimodal resources (Learn, Share). Students receive feedback on their knowledge, and the teacher has real-time access to this data in the Dashboard. This real-time data allows teachers to remediate, accelerate or reinforce learning as needed, in order to help students develop metacognitive abilities.

  Based on this real-time data, teachers can then make decisions about the needs of each student and select an appropriate instructional resource within the concept to meet the students' needs. Discovery Education Experience resources deepen the pool of assets that can be assigned to students. | **Grade 2: Unit 2: Materials from the Land**
  - Unit Level Performance Based Assessment example:
    - Digital: https://preview.tinyurl.com/vujyeon
      - PBA Teachers Guide: https://tinyurl.com/sztxr8x
  
  Student and Teacher Learning Dashboards
  - Video of Dashboard functionality: https://tinyurl.com/y4chmhbz
  
  ![Discovery Education](https://tinyurl.com/...)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| **SP1. Quality of supports for monitoring 3D learning and EP&Cs integration.** | In addition to the full Dashboard, teachers have a Results View for all individual Technology Enhanced items at point of use as well.  

**Builder Tools:**  
Assessment Builder and Discovery Studio give teachers flexibility to create customized assessments.  

**Hands-on Activities and Hands-on Labs:**  
Essential to the integration of a majority of science and engineering practices, hands-on activities and labs allow students to design and conduct investigations, develop models, and use the crosscutting concepts to reflect on their learning through the analysis and conclusion questions accompanying each activity. The student investigation sheet in the digital product purposefully does not provide the procedures for the investigation to encourage students to develop their own methods and processes. Scaffolded student sheets are provided in print if students require more scaffolding with the specific SEP or CCC being addressed in the activity. |           |
### COMPONENT

**SP1. Quality of supports for monitoring 3D learning and EP&Cs integration.**

### STRENGTHS

**Online Interactive Models:**
Students have the opportunity to manipulate various online models found in every concept to collect data and test out their ideas. The analysis of the data collected from the interactives serves as an assessment opportunity for teachers and student reflection.

### CITATIONS

**Hands-on Activity example**
Concept 2.1 Material Properties
- Digital: Activity 8; Think Like a Scientist; Quick Code ca2268s
- TE: Page 47
- SE: Page 24

**Hands-on Lab example**
Concept 2.1 Material Properties
- Digital: Activity 4; Evaluate Like a Scientist; Quick Code ca2261s
- TE: Page 35
- SE: Page 14

**Online Interactive examples**
Concept 2.1: Measuring Matter
- Digital: Beyond tab
  [https://tinyurl.com/y3kjvnfm](https://tinyurl.com/y3kjvnfm)

Concept 2.2 Changing Materials
- Digital: Activity 20; Observe Like a Scientist
  [https://tinyurl.com/wvvv98v](https://tinyurl.com/wvvv98v)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP1. Quality of supports for monitoring 3D learning and EP&Cs integration. | **STEM Project Starters:** Options for students to further elaborate on the disciplinary core ideas through the application of various SEPs and CCCs can be found in the STEM Project Starter section under Beyond as well as in the STEM Connect resource within the Science Techbook bundle. Many of the STEM Project Starters allow students the opportunity to dive deeper into the CA EP&C and research related topics or design engineering solutions to problems related to the environment. | **STEM in Action example**  
Concept 2.2: Changing Materials  
- Digital: Activity 25; Analyze Like a Scientist; Quick Code ca2345s  
- TE Page: 166  
- SE Page: 123  

**STEM Project Starter example**  
Concept 2.2 Changing Materials  
- Digital: Extension 1  
https://tinyurl.com/rbkkgqc |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP2. Quality of capturing student progress over time. | Assessments are designed to:  
  - ensure that students use SEPs integrated with DCIs and CCCs to demonstrate their understanding of phenomena and/or design solutions to problems.  
  - connect student learning experiences to the targeted learning goals.  
  - elicit observable evidence of students’ knowledge of and ability to use grade-level-appropriate elements of the three dimensions.  
  - ensure that students use EP&Cs where applicable to demonstrate their understanding of environmental phenomenon/problem solution.  

California Science Techbook is an interactive, digital resource designed to provide students with multimodal content to enhance and personalize the learning experience. The entire Wonder, Learn, Share (5E) learning cycle described in previous responses utilizes digital content to construct meaningful, interactive lessons—with embedded assessment.  

Examples of these formative and summative types of assessments include, but are not limited to:  

**Multidimensional Technology Enhanced Items (TEIs)**  
TEIs have been embedded throughout each concept to uncover what students know and allow students to demonstrate three-dimensional proficiency of the academic standards. Student responses feed directly to [Student and Teacher Learning Dashboards](https://tinyurl.com/y4chmhbz) 

[Dashboard functionality](https://tinyurl.com/y4chmhbz)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP2. Quality of capturing student progress over time. | the Teacher Dashboard, providing instant access to data to inform instruction. Each TEI has three distinct features: an evidence statement, instructional feedback, and scoring expectations. | **Technology Enhanced Item examples**<br>Concept 2.2 Changing Materials<br>• Digital: Activity 9; Evaluate Like a Scientist; Quick Code ca2319s<br>• TE Page: 130<br>• SE Page: 90  
Concept 2.3 Materials in Design<br>• Digital: Activity 28; Evaluate Like a Scientist; Quick Code ca2407s<br>• TE Page: 280<br>• SE Page: 210 |**Step By Step Guide to the Assessment Builder:**<br>• [http://bit.ly/2BCX85o](http://bit.ly/2BCX85o) |
| Assessment Builder | Discovery Education's Assessment Builder offers a unique opportunity to effectively assess individual student performance, both on the part of the teacher and for student self-assessment. The Assessment Builder tool also provides remediation content suggestions for areas in which students may need further work. Class and individual reports serve as a | |
SP2. Quality of capturing student progress over time.

- A mechanism to measure performance easily in all content areas, provide feedback, and inform educators how to best support individual student growth and improvement. Teachers can utilize pre-created concept and unit assessments or create their own, including standards-based assessments and teacher-created items.

Because the assessment of students is an ongoing process that occurs throughout each lesson, other formative and self-assessment types are embedded throughout digital and print lessons in order to provide benchmarks that show student progress in preparation for the final measure, the summative assessment. Constructed response items, hands-on lab worksheets, and Scientific Explanation sheets include rubrics for scoring, visible to teacher and student. Online responses are compiled and displayed for teachers in a dashboard. Names can be removed from the dashboard and the response order randomized so that responses can be used for class discussion and the selection of student exemplars. The Teaching Learning Dashboard...
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP2. Quality of capturing student progress over time.</td>
<td>in California Science Techbook allows teachers to track student progress on assessment items, with easy-to-read color coding, also known as traffic light scoring.</td>
<td>Teacher Reflection Questions example</td>
</tr>
</tbody>
</table>

**Formative Questions**

<table>
<thead>
<tr>
<th>Class: TEAM CHARTER ACADEMY (106)</th>
<th>Activity: Pulling Objects</th>
<th>Show/Hide Student Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question</td>
<td>Points</td>
<td>Can You Explain Pulling Objects?</td>
</tr>
<tr>
<td>Student 1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Student 2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Student 3</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Legend: | | | | | |
---|---|---|---|---|
Correct | Correct Errors | No Points | Same Points | All Points | Needs Score |

The studio tool allows students to collect their evidence and progression throughout the course, as well as serve as a collaborative tool for students to share their work with their classmates and teachers. Templates within Studio, such as the scientific explanation, allow students to document their explanations over time. Students can use this evidence to reflect on their progression with the three dimensions.

**Teacher Reflection Questions:**
Within critical points in the learning sequence, teachers are provided with questions that ask them to reflect on the three-dimensional learning of their students. These reflection questions are found in both the digital and print teacher resources.

**Teacher Reflection**
- Are my students able to describe the materials used to create human-made objects?
- Do my students have any misconceptions about the term material?
- How well did students engage in the stations? How can my management be improved?

**Teacher Reflection Questions example**

*Concept 2.1 Material Properties*
- Digital: Activity 10; Observe Like a Scientist Quick Code ca2271s
  Note: Make sure Teacher View On
- TE Page: 55

*Natural Materials Versus Man-Made Materials*

**Natural materials** are something occurs on the Earth. They come from plants, rocks, and animals. **Man-made materials** are something created by humans.

Oil is used to create plastic as well as gasoline. Does plastic
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP3. Quality of guidance and tools that use a variety of measures. | Assessments are matched to targeted learning goals and elicit a full range of student thinking by:  
• providing clear expectations (e.g., rubric) to students so they understand how they can demonstrate their knowledge.  
• using a variety of measures (e.g., performance tasks, discussion questions, constructed response questions, project- or problem-based tasks, portfolios, and justified multiple choice).  
• providing set(s) of tasks so that students can demonstrate their understanding of the same learning goals in multiple ways. | Discovery Education Evidence:  
Discovery Education supports students throughout their learning journey, with an end goal of students achieving proficiency in defined learning goals. Within the Discovery Education Comprehensive Science Program, varied formative and summative assessments are embedded into the Wonder, Learn, Share (5E) learning cycle for each concept, along with assessments at the unit level.  
Learning Targets:  
Every concept in the Student Edition begins with learning targets written in the form of “I Can” statements. These are used to articulate clear learning expectations for students. | **Scientific Explanations**  
Grade 2: Unit 2: Materials from the Land  
Concept 2.1 Material Properties  
- Digital: Activity 15, Investigate Like a Scientist  
  Quick Code ca2280s  
  § Student Investigation Sheet  
  https://tinyurl.com/wws5yzq  
  § Teacher’s Guide  
  https://tinyurl.com/w7qefyf  
- Print:  
  § TE: Page 63  
  § SE: Page 38  

Teacher Note  
- Digital  
  https://tinyurl.com/yxxwm9pl  
  Note: Make sure Teacher View On
### Component

**SP3. Quality of guidance and tools that use a variety of measures.**

### Strengths

**Student Objectives**

By the end of this lesson:

- I can observe patterns in different materials found in the landscape.
- I can collect information and analyze materials to identify their properties.
- I can plan and conduct an investigation to compare, sort, and describe materials based on their properties.

### Various Measures:

There are a variety of measures throughout California Science Techbook that allow students to demonstrate their learning. Examples of these various assessments include, but are not limited to:

- **Technology Enhanced Items (TEIs)** in each concept allow students to demonstrate three-dimensional proficiency of the performance expectations. Student responses feed directly to the Teacher Dashboard, providing instant access to data to inform instruction. Each TEI has built-in scaffolded feedback for students, and a variety of TEI types that are aligned to the CAST item types are integrated across each concept.

### Citations

- Teacher Note
  - **Materials**
    - **per group**:
      - Rocks (at least six rocks that can be organized into two or three groups based on physical characteristics such as color, shape, grain size, and texture)
      - Magnifying glass/hand lens
    - **per student**:
      - Writing paper, science notebook, or student activity sheet for recording ideas
  - Included in resources at
    - (c) Commerical images

- Teacher Hands-On Activity Video: Rock Classification

  **Instructional Focus**
  
  In this activity, students make observations to collect data on the properties of rocks and use observations to describe patterns in their properties. They sort the rocks by shape, color, and texture. Then they classify rocks according to various characteristics, including identifying patterns.
### Component | Strengths | Citations
--- | --- | ---
SP3. Quality of guidance and tools that use a variety of measures. | - Summative Assessments are in each concept's Share section, with their results displayed in the Teacher Dashboard. These assessments include multiple types of TEIs, including drag and drop, select all that apply, and read and highlight items, to name a few. Teachers are able to identify areas of strength and weakness on each assessment for each student and subsequently provide remediation to ensure the achievement of proficiency for all students.

Scientific Explanations: Scientific Explanations allow students to analyze complex text and authentic data and evaluate information to support a student-generated claim. Following the Claim-Evidence-Reasoning format, students and teachers can review and provide feedback to one another to increase the rigor of the response throughout a concept, unit, or course. |  | 

#### Summative Assessment

**Grade 2: Unit 2: Materials from the Land**

**Concept 2.1 Material Properties**

- **Digital:**
  - Summative Assessment
    - [https://tinyurl.com/ur93yau](https://tinyurl.com/ur93yau)
  - Teacher's Guide
    - [https://tinyurl.com/rfz67v6](https://tinyurl.com/rfz67v6)

*Note: Make sure Teacher View On*

**Scientific Explanation Teacher Rubric**

[https://tinyurl.com/y6mmlhrz](https://tinyurl.com/y6mmlhrz)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP3. Quality of guidance and tools that use a variety of measures.</td>
<td><strong>Hands-On Activities and Hands-On Labs</strong> (HOAs and HOLs) provide opportunities for students to demonstrate the science and engineering practices and analyze data to look for evidence of crosscutting concepts. Based on the proficiency of the students, teachers can determine the appropriate amount of scaffolding to provide. Analysis and conclusion questions allow students to reflect on their learning. <strong>STEM Connect</strong> projects use an interdisciplinary approach to push students to seek solutions to important real-world challenges such as sustainable farming, water conservation and other environmental critical issues. <strong>STEM Connect</strong> is built using a 4Cs STEM framework to allow students to develop the 21st-century skills of creativity, critical thinking, communication, and collaboration. Using <strong>STEM Connect</strong> projects to assess students’ science learning provides the teacher with set(s) of tasks so that students can demonstrate their understanding of the same learning goals in multiple ways.</td>
<td><strong>Hands-on Activity example</strong>&lt;br&gt;Concept 2.1 Material Properties&lt;br&gt;• Digital: Activity 8; Think Like a Scientist; Quick Code ca2268s&lt;br&gt;• TE: Page 47&lt;br&gt;• SE: Page 24&lt;br&gt;&lt;br&gt;<strong>Hands-on Lab example</strong>&lt;br&gt;Concept 2.2 Material Changing Materials&lt;br&gt;• Digital: Activity 8; Investigate Like a Scientist; Quick Code ca2318s&lt;br&gt;• TE: Page 125&lt;br&gt;• SE: Page 85&lt;br&gt;&lt;br&gt;<strong>STEM Connect</strong>&lt;br&gt;• Grade 2-3: Water by the Sea&lt;br&gt;<a href="https://tinyurl.com/tj8jwdm">https://tinyurl.com/tj8jwdm</a></td>
</tr>
<tr>
<td>Component</td>
<td>Strengths</td>
<td>Citations</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| SP3. Quality of guidance and tools that use a variety of measures. | **Assessment Tools**, including Discovery Experience Resources, provide teachers and students with ample resources not only to build different types of assessments but also to provide students with a unique set of tools that allows them to demonstrate their learning in unique ways. Tools like Assignment Builder, Assessment Builder, Writing Prompt Builder, and Discovery Studio give teachers flexibility to create customized assessments. Discovery Education’s Studio also provides students with a “digital poster” to make their learning collaborative and public while also using the 200,000 Experience robust digital content assets to build, enhance, and enrich their understanding. | ![Water by the Sea](image)  
**Step by Step Guide to Assessment Builder**  
**Step by Step Guide to Studio**  
- [https://tinyurl.com/y8rt7us2](https://tinyurl.com/y8rt7us2) |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP4. Quality of support and strategies for ensuring equitable access. | Assessments are designed to be:  
- free from bias (e.g., gender, racial, socioeconomic status, cultural).  
- accessible to all students (e.g., reading level, accommodations). | |
| | | |
| | Assessment items developed for California Science Techbook allow all students the ability to demonstrate their disciplinary core knowledge. Math tools such as the scientific calculator, unit converter, and graphing calculator are available for use at all times by students, including in the unit-level performance-based assessment (PBA). The students do not need to access prior experiences to complete the unit assessments and are provided with all necessary text and factual information needed to meet the intent of each item. | |
| | Summative unit-level performance-based assessments are available in Spanish. For Technology Enhanced Items (TEIs) within each concept, the adaptability of the Discovery Education platform to work with Google Translate allows students to access additional languages beyond Spanish. | |

**Summative Assessment**  
Grade 2: Unit 2: Materials from the Land  
Concept 2.1 Material Properties  
- Digital:  
  - Summative Assessment  
    - [https://tinyurl.com/ur93yau](https://tinyurl.com/ur93yau)  
  - Teacher’s Guide  
    - [https://tinyurl.com/rfz67v6](https://tinyurl.com/rfz67v6)  

Note: Make sure Teacher View On  
TEI translated into simplified Chinese using Google Translate.
## SP5. Quality of use of formative and summative assessments.

The materials provide self- or peer-assessments that allow students to reflect on and monitor their learning over time.

Students can monitor their progress across a course using the student level dashboard. The dashboard includes color-coded, or traffic light scoring, for each technology-enhanced item found within a concept.

As students progress through concepts, there are many opportunities that are provided for reflection throughout the Student Edition. Teacher embedded notes throughout also guide students to reflect on their new thinking.

### Peer Conversation Example

**Concept 2:2 Changing Materials**
- **Digital:** Activity 32; Observe Like a Scientist; Quick Code ca2358s
- **TE:** Page 183
- **SE:** Page 138

### Formative Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Can You Explain Falling Objects?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Points</td>
<td></td>
</tr>
<tr>
<td>Student 1</td>
<td></td>
</tr>
<tr>
<td>Student 2</td>
<td></td>
</tr>
<tr>
<td>Student 3</td>
<td></td>
</tr>
</tbody>
</table>

Legend: ⬜ Question Details | ⭕ No Points | ◼ Some Points | ⬤ All Points | ⭦ Needs Score

**Teacher Note**

**Instructional Notes**

In this activity, students obtain information from maps and then communicate it to the class by citing examples of reversible and irreversible changes in matter.

**Strategy**

Use this video to review reversible and irreversible change.

**ASK**

- What are some examples of reversible and irreversible changes? (Answers may vary. Possible student response: reversible: Melting and freezing water, Reversible; burning wood, cooking chicken)

Direct students to talk with a partner about why some changes are reversible and others are not. Observe student conversations and encourage students to consider whether they agree or disagree with their partner. Provide language like, “I agree with ___ because ___” or “I disagree with ___ because ___.”
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SP5. Quality of use of formative and summative assessments. | Additionally, students can reflect on their growth in the development of scientific explanations constructed during the Explain portion of each lesson. Students will learn to increase the rigor and relevance of the evidence embedded within their explanations. The “your ideas” item found in Wonder (Engage) under the Can You Explain (CYE) question allows students to record initial ideas or responses to the questions. Students can compare their initial responses after constructing their explanations in Share (Explain). Students can review and provide feedback to one another throughout. | Explain activity example  
Grade 2: Unit 2: Materials from the Land  
Concept 2.3 Material in Design  
- Digital: Activity 29; Record Evidence Like a Scientist; Quick Code ca2408s  
- TE: Page 282  
- SE: Page 212 |
## Designed for CA NGSS: Teacher Support

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS1. Phenomena/problems Driven Three-Dimensional Learning. | Teacher materials provide background information about the phenomena or problems included in the learning sequence and across sequences provide:  
- an explanation of the role of phenomena or problems in driving student learning.  
- rationale for why the unit phenomena or problems were selected for the targeted DCIs, SEPs, CCCs, and EP&Cs (when applicable).  

Anchor and Investigative Phenomena were identified for each unit and concept based on their ability to demonstrate the disciplinary core ideas of the required performance expectations of the instructional segment bundles. Writers of California Science Techbook also considered the age appropriateness of topics to select real-world phenomena that would engage students within each grade level.  

**Unit Level Support:**  
Within each Unit, a real-world anchor phenomenon piques students’ curiosity and sets a purpose for learning across concepts. A Unit Project, expects students to return to the anchor phenomenon to summarize learning across the Unit Storyline. In the print Teacher Edition, teachers are provided with several options on how to use the anchor phenomenon to engage students with asking questions and defining problems. Print and digital teacher supports also provide Unit Storylines and conceptual maps as |

### Three Dimensions at a Glance

**Grade 2: Unit 2: Materials from the Land**  
- Print:  
  - TE: Page 3
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS1. Phenomena/problems Driven Three-Dimensional Learning. | resources of how the concepts build upon one another, related to the Anchor Phenomenon and the Unit Project. The Unit Outline digitally also allows teachers to quickly view the PEs associated with the investigative phenomena for each concept. **Concept-Level Support:** Each concept begins with a smaller, real-world investigative phenomenon allowing students to dive into the remainder of content across Wonder, Learn, Share, looking for evidence to explain the investigative phenomenon. Teachers are supported through the use of embedded teacher notes and additional strategies found in the print Teacher Edition. For example, the first teacher note found in Wonder (Engage) provides a strategy to utilize with students. A teacher can use the Can You Explain? question as a frame for learning or can encourage students to develop their own questions to explore within the concept. In California Science Techbook teachers receive additional support through teacher notes. Point-of-use teacher notes within each tab, additional assessments, student misconceptions, background material, and more are visible by turning on the Teacher View toggle. **Teacher Notes:** Teachers notes found in Wonder (Engage) describe how to set up an experience for students to allow the students to generate questions around the investigative phenomena. Teacher notes found within Unit Project in Share (Elaborate) help the teacher structure small... | **Anchor Phenomenon**
Grade 2: Unit 2: Materials from the Land
- Digital: Anchor Phenomenon: Getting Started Quick Code ca2250s
- Print:
  - TE: Page 14
  - SE: Page 2

Example Teacher Note: Wonder (Engage)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS1. Phenomena/problems Driven Three-Dimensional Learning.</td>
<td>groups or prepare materials needed for design activities. These strategies help both the teacher and student focus on the components of the phenomenon related to the associated DCIs for the concept. <strong>Teacher Guides:</strong> Throughout the entire 5E learning cycle, students will be exposed to activities expecting them to generate explanations or solve problems. For the scientific explanation activity found in Share (Explain), as well as all Hands-on Activities, additional detailed teacher guides support teachers in successfully preparing and carrying out the activity with their class. <strong>Three-Dimensional Learning Supports:</strong> California Science Techbook includes several tiers of support to assist teachers with planning three-dimensional learning experiences. Explicit guidance for three-dimensional learning is included throughout the print Teacher Edition and the digital notes. NGSS standard indicators are noted at both the unit and concept level to guide teacher planning. <strong>Unit-Level Support</strong></td>
<td><strong>Example Teacher's Guide: Hands-on Labs</strong> Concept 2.1 Material Properties  - Digital: Activity 23: Investigate Like a Scientist <a href="https://tinyurl.com/uk98c8n">https://tinyurl.com/uk98c8n</a>  <strong>Example Teacher Hands-On Activity Video</strong> Concept 2.1 Material Properties  - Digital: Activity 23: Investigate Like a Scientist <a href="https://tinyurl.com/rdot4hs">https://tinyurl.com/rdot4hs</a>  <strong>Unit Storyline and Outline</strong> Grade 2: Unit 2: Materials from the Land  - Print:  - TE: Page 12-13</td>
</tr>
</tbody>
</table>

<p>| Example Teacher's Guide: Hands-on Labs | Concept 2.1 Material Properties  - Digital: Activity 23: Investigate Like a Scientist <a href="https://tinyurl.com/uk98c8n">https://tinyurl.com/uk98c8n</a> |
| Example Teacher Hands-On Activity Video | Concept 2.1 Material Properties  - Digital: Activity 23: Investigate Like a Scientist <a href="https://tinyurl.com/rdot4hs">https://tinyurl.com/rdot4hs</a> |
| Unit Storyline and Outline | Grade 2: Unit 2: Materials from the Land  - Print:  - TE: Page 12-13 |</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS1. Phenomena/problems Driven Three-Dimensional Learning. | **Concept-Level Support**  
- Learning Objectives driven by the expectations of the NGSS  
- Days of Instruction:  
  - Bolded text highlights the dimensions of the PE addressed during each activity  
  - Activity-level SEP and CCC integration  
  - Pathways for Learning guidance for a variety of technology settings  
  - Teacher reflection questions encourage reflection on students’ performance across the three dimensions of NGSS  
  - Embedded Teacher Notes describe strategies on how to create a three-dimensional experience for students  
  - Differentiation Strategies to support a variety of learners | |  

**Investigative Phenomena**  
Grade 2: Unit 2: Materials from the Land  
**Concept 2.1 Material Properties**  
- Digital: Activity 2; Ask Questions Like a Scientist; Quick Code ca2258s  
- Print:  
  - TE: Pages 32  
  - SE: Page 10 |
### Component: TS1. Phenomena/problems Driven Three-Dimensional Learning

#### Concept Pacing Options

**Concept 2.1 Material Properties**

- **Digital:** [https://tinyurl.com/w7o35u9](https://tinyurl.com/w7o35u9)
- **Print:**
  - TE: Pages 24-27

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### Concept Pacing Options

**Grade 2: Unit 2: Materials from the Land Concept 2.1 Material Properties**

- **Digital:** [https://tinyurl.com/w7o35u9](https://tinyurl.com/w7o35u9)
- **Print:**
  - TE: Pages 24-27
Teacher materials describe and provide a rationale for the conceptual framework and sequence of ideas, practices, and learning experiences in the learning sequences and for across sequences:

- strategies for linking student experiences across lessons to ensure student sense-making and/or problem-solving focused on phenomena or problems is linked to learning across all three dimensions.
- connections to other science domains, nature of science, engineering, technology, and applications of science, math, ELA, and EP&Cs (when applicable).

California Science Techbook provides for coherence by:

- limiting the topics covered to the topics identified in NGSS
- arranging experiences so that student understanding grows over the course of the unit.
- connecting concepts over the course of the year and from one year to the next.

Because the courses in California Science Techbook were designed to address the requirements of NGSS, they include the core ideas, science and engineering practices, and crosscutting concepts that are identified in NGSS for a given grade. California Science Techbook addresses no more and no less than the content specified within NGSS while expanding the time and depth devoted to the core concepts.

California Science Techbook provides for coherence by
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS2. Coherence.</td>
<td>arranging topics so that student understanding grows over the course of a lesson and by connecting ideas from one lesson to another. Each Wonder, Learn, Share (5E) model lesson is designed for multiple sessions. The print Teacher Edition for California Science Techbook supports teachers as they plan their instruction to build upon the appropriate progressions related to all three dimensions of the standards. Unit Level Support: Three Dimensions at a Glance: Shows how each concept is aligned to the three-dimensional components of the performance expectations found within the unit. Scope and Sequence: Includes NGSS learning progression charts indicating the previous and next grade level progression based on the standards for the concept, as well as the unit storylines across the course. NGSS Overviews: Provides breakdowns of the performance expectations for the concept, as well as the ELA, ELD, and Math Standards, and California Environmental Principles associated with the Performance Expectation.</td>
<td></td>
</tr>
</tbody>
</table>
### Scope and Sequence

**Grade 2: Unit 2: Materials from the Land**

- **Print:**
  - TE: Pages xxxviii - xliii
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS2. Coherence.</td>
<td><strong>Concept Level Support:</strong> Embedded within the teacher strategies for activities, teachers are provided with guidance on appropriate expectations for students’ prior knowledge based on the progression of the DCIs within each course. In Hands-on Investigations, support for teachers on how to support students’ progression with designing and carrying out investigations includes a scaffolded and open-ended approach.</td>
<td><strong>California Common Core and ELD and EP&amp;Cs</strong>&lt;br&gt;Grade 2: Unit 2: Materials from the Land&lt;br&gt;○ Print:&lt;br&gt;  - TE: Pages 4-7&lt;br&gt;<strong>Concept 2.1 Material Properties</strong>&lt;br&gt;Print:&lt;br&gt;TE (Learn): Page 45-89</td>
</tr>
</tbody>
</table>
## DISCOVERY EDUCATION NGSS TIME RESPONSE

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS3. Effective Teaching. | Teacher materials support the use of and provide a rationale and evidence of effectiveness for strategies that:  
- support students in learning through authentic and meaningful phenomena or design problems.  
- support student learning across the three dimensions.  
- make student thinking visible; promote reasoning, sense-making, and problem-solving; challenge student thinking; and develop metacognitive abilities | Concepts at a Glance  
Grade 2: Unit 2: Materials from the Land  
Concept 2.1 Material Properties  
- Digital: [https://tinyurl.com/sox2bol](https://tinyurl.com/sox2bol)  
- Print:  
  - TE: Pages 22-23 |

California Science Techbook digital and print, was designed and developed to meet the needs of students and to provide guidance and flexibility for teachers to use in a variety of classroom settings.

**Pacing and At a Glance Guides:**  
The print Teacher Edition includes pacing guides and flexible pathways for optimal instruction in any instructional setting. The “At a Glance” supports, provide teachers with quick overviews as they prepare for instruction ahead of time.

**Days of Instruction:**  
Instruction is presented in 20-minute segments by day. The NGSS performance expectations for the day are also featured with the specific aspects of each standard covered that day in bold. Daily and Activity Based Instructional Focus statements provide three-dimensional learning targets.
## DISCOVERY EDUCATION NGSS TIME RESPONSE

### Grade 2

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS3. Effective Teaching.   | **Supporting 21st Century Learners:** Through every step of the learning cycle, California Science Techbook features diverse and rich multimedia resources: video, images, audio, interactives, virtual labs, online models, animations, rich informational text, and more. Marquee Discovery Education content, including MythBusters, Street Science, and Outrageous Acts of Science, blend entertainment with education to motivate students to investigate real-world phenomena. Virtual labs and online models allow students to quickly manipulate variables to test out their ideas in an online environment. Pathway to Learning charts provide options for teachers to deliver three-dimensional instruction in a one to one, blended or print based classroom.  

**Teacher Notes with Strategies:** Detailed teacher notes, for each activity, make the connection between the high-quality digital assets and activities and the SEPs and CCCs explicit for teachers through instructional guidance. Strategies elicit student thinking and guide teachers in how to design a three-dimensional learning environment. Research-based instructional strategies, such as the Discovery Education Spotlight on Strategies (SOS), promote scientific discourse around the investigative and anchor phenomenon. SEP and CCC indicators are included for activities found in each day of instruction in the both print and digital. |                                                          |

### Concept Pacing Options

**Concept 2.1 Material Properties**
- **Digital:** [https://tinyurl.com/w7o35u9](https://tinyurl.com/w7o35u9)
- **Print:**
  - TE: Pages 24-27
### Activities:

Activity Type headers allow teachers and students to quickly identify opportunities for asking questions related to the phenomenon, communicating sensemaking, and solving problems.

- **Ask Questions Like a Scientist:** Students are presented with the investigative phenomenon and expected to generate their own questions to drive their learning in Learn/Explore.

- **Observe Like a Scientist:** Students utilize scientific discourse around “Talk Together” questions to communicate their sensemaking.

- **Record Evidence Like a Scientist:** Students reason through the evidence they have collected in Learn/Explore to construct and communicate a scientific explanation to one of their own driving questions or the Can You Explain question.

- **Design Solutions Like a Scientist:** Students are presented with design challenges and expected to research, design, test and propose solutions.

### Teacher Notes and Strategies

**Grade 2: Unit 2: Materials from the Land Concept 2.1 Material Properties**

- Digital: [https://tinyurl.com/te2dall](https://tinyurl.com/te2dall)
  - Note: Make sure Teacher View On

- Print:
  - TE: Pages 24-27 and 52-55

### Example Teacher Note - Digital

```
Teacher Note - Digital

In this activity, students summarize their learning from the station activities and record their thoughts on the materials they would use to build a windmill. They may use a think-pair-share strategy to share their ideas.

Strategy:
After students have completed all stations, have them explain their choices to the class. Discuss what materials they would use and why. Ask:
- What other materials are suitable for building windmills? Why?

Students may need additional materials to build windmills, so encourage them to gather resources for their projects.
```

### Example Embedded Strategy - Print TE

![Image of embedded strategy]

---

**DISCOVERY EDUCATION SCIENCE TECHBOOK**
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</thead>
</table>
| TS3. Effective Teaching.   | **Teacher Reflection Questions:** Throughout each concept, professional learning questions encourage teachers to consider how activities have developed SEP and CCC proficiency with their students and how they may modify the activity to better meet the needs of their students.  
**Quick Digital Access:** Throughout the print Student and Teacher Editions, QR Codes and short links indicate opportunities to deepen learning through rich media and/or allow students to access content in a blended print and digital environment. | **Spotlight on Strategies**  
  - Digital: [https://tinyurl.com/y62cg28n](https://tinyurl.com/y62cg28n)  
  **Activity Types**  
  - Print:  
    - TE: Pages xxix  
  **Example Teacher’s Edition**  
  Concept 2.1 Material Properties  
  - Digital: Quick Code ca2259s  
  - Print:  
    - TE: Page 34 |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS3. Effective Teaching</td>
<td><strong>Professional Learning Center:</strong> The Professional Learning Center in California Science Techbook is an additional deep and rich resource for teachers to participate in interactive courses, see other Discovery Education teachers’ classrooms, and access the online DEN community. The DEN online community is a global platform where teachers can learn, share, and connect with other educators.</td>
<td>Concept 2.1 Material Properties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Digital: Quick Code ca2259s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Print:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TE: Page 12</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Professional Learning Center</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Digital:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <a href="https://teachers.discoveryeducation.com/">https://teachers.discoveryeducation.com/</a></td>
</tr>
</tbody>
</table>
## Grade 2

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| **TS4. Support for Students with Diverse Learning Needs.** | Teacher materials provide an array of strategies:  
- to support student access to the targeted learning goals, experiences, and performances.  
- that help teachers differentiate instruction. | **ELD Support**  
Grade 2: Unit 2 Materials from the Land  
Concept 2.1 Material Properties  
**Unit Level**  
- Print:  
  - TE: Page 16 |

California Science Techbook California allows teachers to differentiate instruction, degrees of readiness, and interests and offers resources to help vary content, process, product, and learning environment through the core instructional pathway.

### Content-Specific Differentiation Strategies:

Within the Print Teacher Edition and Digital Teacher notes, teachers are provided with differentiation strategies, including scaffolded support for English language learners, struggling students, and advanced students, specific to the concept and that include reference to the use of multimedia assets. These differentiation strategies are provided at point of use.

### Student Interactive Worktext Tools:

- Text read-aloud features
- Lexile and language options
- Highlighting and note-taking
- Interactive glossary

**Concept Level**

- Digital: [https://tinyurl.com/slwhb](https://tinyurl.com/slwhb)  
  Note: Make sure Teacher View On  
- Print:  
  - TE: Page 62
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TS4. Support for Students with Diverse Learning Needs.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Differentiation Strategies**
Grade 2: Unit 2 Materials from the Land
Concept 2.1 Material Properties
- Digital: [https://tinyurl.com/qwuzlmp](https://tinyurl.com/qwuzlmp)
Note: Make sure Teacher View On
- Print:
  - TE: Page 60

**Student Misconceptions**
Grade 2: Unit 2 Materials from the Land
Concept 2.1 Material Properties
- Digital: Quick Code ca2268s
- Print:
  - TE: Page 48

**Interactive Worktext Tools**
Grade 2: Unit 2 Materials from the Land
Concept 2.1 Material Properties
- Digital: [https://tinyurl.com/syeo2re](https://tinyurl.com/syeo2re)

**Spanish language option example**

In the Three Little Pigs story, the first two pigs built their houses using straw and sticks. The pigs could have thought more about these materials. They might have chosen different materials if they knew a strong wind could destroy their work. Comparing a variety of materials can be helpful. Do you think the pigs’ houses would have kept them safe in the rain?

Engineers compare materials. They observe materials and test their properties. First, they decide what property of an object they want to see. For example, the engineers might want to know which material is the hardest or which material is waterproof. Then, they observe what happens when each different material is tested in the same way.
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS4. Support for Students with Diverse Learning Needs. | **Accommodate the differences in learners through student-centered instruction:** Features such as high-quality graphics and videos, game play, virtual labs, and robust STEM challenges motivate students to think deeply about topics that are traditionally taught through direct instruction, encouraging student-centered instruction and supporting teachers as learning facilitators.  

**Stress the collectivity of interactions as well as individuality:** Throughout California Science Techbook, learning experiences are designed for student collaboration and individual exploration. Hands-On Activities, Talk Together and STEM Project Starters provide opportunities for students to work together, while technology enhanced items encourage individual accountability. California Science Techbook seamlessly incorporates Universal Design for Learning (UDL) principles, so students can access and create content and communicate their ideas using multiple means of representation.  

**Expansive Content to Reach All Learners:** The Beyond tab provides a variety of additional resources that can be used to differentiate by accelerating or remediating as needed. These related resources include the following: videos, Lexile-leveled reading passages, virtual labs, and editable Hands-on Activities/Labs. | ![Image](https://example.com/image.png) | Station-Based Activities  
Grade 2: Unit 2 Materials from the Land  
Concept 2.1 Material Properties  
- Print:  
  - TE: Page 51 |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| **TS4. Support for Students with Diverse Learning Needs.** | Discovery Education’s Experience resource, which is also part of the adoption package, provides a repository of K–12, cross-curricular resources that can be used to differentiate and enhance learning for all students in the science classroom. | Peer Conversation example  
Concept 2:2 Changing Materials  
- Digital: Activity 32; Observe Like a Scientist; Quick Code ca2358s  
- TE: Page 183  
- SE: Page 138  
Beyond tab  
Concept 2:1 Material Properties  
- Digital: [https://tinyurl.com/qu4dcbe](https://tinyurl.com/qu4dcbe)  
**Discovery Education Experience**  
- Digital: [https://tinyurl.com/yxms7kjl](https://tinyurl.com/yxms7kjl)  
**Pathways to Learning**  
Grade 2: Unit 2 Materials from the Land  
Concept 2.1 Material Properties  
- Digital: [https://tinyurl.com/rp78p7b](https://tinyurl.com/rp78p7b)  
- Note: Make sure Teacher View On  
- Print:  
  - TE: Page 28 |
| **Assigning Features:** Teachers can tailor instruction and meet the needs of all students by assigning appropriate content based on specific learning preferences or developmental needs. In California Science Techbook teachers can quickly assign and share instructional resources to individual students, groups of students, or the entire class. |  
**Modalities for Learning:** Although many students prefer to consume content in a digital manner, often a print-based experience can be more effective in helping them solidify content knowledge. California Science Techbook provides flexibility for teachers to select the most appropriate mode of delivery of content for students.  
- **Print Student Edition:** The student consumable worktext is available for all students, Grades K-8, in both English and authentic Spanish.  
- **Print Accessibility:** Within the toolbar in the digital Science Techbook, teachers can print a page or the entire concept with one click of a button.  
- **Pathways for Learning:** Suggestions on how to utilize digital assets in a paper-based, blended, and fully digital classroom environment are provided for each concept in the print TE. |  
- **Print:**  
  - TE: Page 28 |

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS4. Support for Students with Diverse Learning Needs. | **Professional Learning:** Teacher professional learning is bundled in the California Science Techbook program. The face-to-face and job-embedded professional learning sessions focus on getting started with and using the resources to meet the needs of all students through effective, differentiated instruction. These sessions also utilize the Spotlight on Strategies that are available in the Discovery Education Experience. These SOS are created by teachers, for teachers and now also include videos specifically for students on how they, too, can incorporate these strategies into their learning. | **DEN Online Community**
The DEN Online Community is a global platform where you can learn, share, and connect with other educators using Discovery Education.

- **Discovery Education Network (DEN)**
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS5. Support to Monitor Student Progress. | **Materials provide support for teachers to monitor student learning and progress over time, make decisions about instruction, and provide feedback to students.** Teachers can easily monitor student progress in California Science Techbook through different modalities of instruction, such as Hands-on Investigations, Interactives and Technology Enhanced Items embedded within the Wonder, Learn, Share (5-E) learning cycle at point of use. Teachers can easily view the formative assessment opportunities in each concept by reviewing the Concept at a Glance information in the print Teacher Edition. Summative Unit level Assessments can be located in the digital program under the Unit Resources tab. These assessments are CAST-like in that they mirror the state assessment in format, task type and content, including questions that utilize at a minimum 2 of the 3 dimensions. The assessments items are launched through an engaging real-world application and require students to apply new content understanding. | **Concept at a Glance** Grade 2: Unit 2: Materials from the Land Concept 2.1 Material Properties  
- Digital: [https://tinyurl.com/sox2bol](https://tinyurl.com/sox2bol)  
- Print:  
  - TE: Pages 22-23  

**Summative Assessments** Grade 2: Unit 2: Materials from the Land Concept 2.1 Material Properties  
- Digital:  
  - Summative Assessment [https://tinyurl.com/ur93yau](https://tinyurl.com/ur93yau)  
  - Teacher’s Guide [https://tinyurl.com/rfz67v6](https://tinyurl.com/rfz67v6)  
Note: Make sure Teacher View On
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS5. Support to Monitor Student Progress.      | **Dashboard:** Teachers are equipped with a Dashboard on the right-hand side of the screen that shows all student answers to responses from the Technology Enhanced Items (TEIs) embedded in the Interactive Student Worktext. Throughout the learning progression, each tab of each concept includes Technology Enhanced Items that have students connect to what they already know about the topic (Wonder), and then as they progress, to monitor what they do learn as they explore and learn through a variety of multimodal resources (Wonder, Learn, Share). Students receive feedback on their knowledge, and the teacher has real-time access to this data in the Dashboard. This real-time data allows teachers to remediate and differentiate as needed in order to help students develop metacognitive abilities. Based on this real-time data, teachers can then make decisions about the needs of each student and select an appropriate instructional resource within the concept to meet the students’ needs. Discovery Education Experience resources deepen the pool of assets that can be assigned to students. In addition to the full Dashboard, teachers have a Results View for all individual Technology Enhanced items at point of use as well. | **Results Dashboards**  
  Video of Dashboard functionality:  
  - [https://tinyurl.com/y4chmbhz](https://tinyurl.com/y4chmbhz)  
  **Teacher Dashboard**                                                                                                                                                                                                                                                                                                                                 |
<table>
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS5. Support to Monitor Student Progress. | **Builder Tools:** Assessment Builder and Discovery Studio give teachers flexibility to create customized assessments. | ![Assessment Settings and Materials](https://tinyurl.com/y4chmhbz)  
**Student and Teacher Learning Dashboards**  
Video of Dashboard functionality:  
- [https://tinyurl.com/y4chmhbz](https://tinyurl.com/y4chmhbz)  
**Teacher “Traffic Light Scoring” Dashboard** |
### Component

<table>
<thead>
<tr>
<th>SW1. Quality of opportunities to explain phenomena/solve problems.</th>
</tr>
</thead>
</table>

### Strengths

Materials provide anchoring and investigative phenomena/problems that:
- engage students as directly as possible in authentic and relevant experiences.
- are matched to targeted learning goals.
- can be figured out/solved using scientifically accurate understandings and abilities.
- make connections beyond and to their daily lives including to their homes, neighborhoods, communities, local environment, and/or cultures.

### Phenomena/Problems

The Unit Pages provide students direct access to the real world, relevant, Anchor Phenomena for the unit, as well as Investigative Phenomena for each concept found in the unit. The Unit pages are available both in print and digital. Students are engaged in real-world, often local and relatable phenomena using video, imagery, hands-on experiences, and other modalities.

As students move through the learning progression, the Anchor Phenomenon is connected to concept Investigative Phenomena, which will drive student explorations using the SEPs through the lens of the CCCs and wrap up with a real-world, relevant STEM Unit Project directly related to the anchor phenomenon. Students are encouraged to write their own questions, but phenomena are also paired with guided questions for scaffolding when appropriate.

### Citations

**Anchor Phenomena**
- Grade 2: Unit 2: Materials from the Land
  - Digital: Anchor Phenomenon: Getting Started; Quick Code ca2250s
  - Print:
    - TE: Page 14
    - SE: Page 2

**Investigative Phenomena**
- Grade 2: Unit 2: Materials from the Land
  - Concept 2.1 Material Properties
    - Digital: Activity 2; Ask Questions Like a Scientist; Quick Code ca2258s
    - Print:
      - TE: Pages 32
      - SE: Page 10

**Unit Project**
- Grade 2: Unit 2: Materials from the Land
  - Digital:
    - [https://tinyurl.com/te8ur7r](https://tinyurl.com/te8ur7r)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SW1. Quality of opportunities to explain phenomena/solve problems. | These questions serve as the purpose for learning in the concept and the prompt for students to construct a formal scientific explanation in Share/Explain using scientifically accurate evidence from the activities in Learn/Explore. The Phenomena and the STEM Unit Projects feature real world engaging connections to student’s daily lives, homes and communities and/or culture. Examples of these projects range from noticing water evaporating in a fish bowl to designing a water filtration device to reduce water pollution. At the end of each Unit is a performance-based Unit Assessment, found in the Unit Resource tab in the digital program. These CAST-like assessments are rooted in real world, local or relatable anchor phenomena. Students are asked to apply understanding and three-dimensional learning to complete the task items. | Performance-Based Unit Assessment  
Grade 2: Unit 2: Materials from the Land Concept 2.1 Material Properties  
- Digital:  
  - Summative Assessment  
    - https://tinyurl.com/ur93yau  
  - Teacher’s Guide  
    - https://tinyurl.com/rfz67v6 |
<table>
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SW2. Quality of building a three-dimensional conceptual framework. | Materials include learning experiences that help students build scientifically accurate understandings and abilities through opportunities for students to:  
- Link prior knowledge negotiated new understanding and abilities.  
- Do work that approximates the nature of science  
- Use reasoning to connect grade appropriate SEP, DCI, and CCC elements and EP&C’s (when applicable).  
- Ask and answer questions that link learning over time  
- Negotiate new understandings and abilities by comparing their ideas, their peers’ ideas, and ideas encountered in the learning experience(s).  
- Apply their understandings and abilities in a variety of ways | Wonder: Can You Explain Example  
Grade 2: Unit 2: Materials from the Land  
Concept 2.1 Material Properties  
- Digital: Activity 1, Can You Explain?  
  Quick Code ca2256s  
- Print:  
  - TE: Page 30  
  - SE: Page 8 |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW2. Quality of building a three-dimensional conceptual framework.</td>
<td><strong>Wonder/Engage:</strong> In California Science Techbook, the Wonder (Engage) section provides phenomena-driven or problem-based learning experiences as catalysts for the inquiry process, triggering students’ natural sense of curiosity and wonder. Students are challenged to describe real-world phenomena and to develop questions around these phenomena through Can You Explain? questions. Technology Enhanced Items (TEIs) help students show what they already know about a concept, including their preconceptions and misconceptions. <strong>Learn/Explore:</strong> Providing the majority of the robust scientific content, the Learn (Explore) section features text and resources that help students test predictions, collect evidence, and record observations and ideas. Learn also contains engaging Interactives and Hands-On Activities that check for understanding and provides opportunities for students to apply what they have learned. <strong>Share/Explain:</strong> This section encourages students to verbalize and demonstrate their conceptual understanding, new skills, and behaviors by constructing a scientific explanation related to the Can You Explain? question first posed in Wonder.</td>
<td><strong>Learn: and Hands-On Investigation and Interactive</strong> <strong>Hands-On Investigation example</strong> Grade 2: Unit 2: Materials from the Land Concept 2.1 Material Properties  - Digital: Activity 15, Investigate Like a Scientist Quick Code ca2280s  - Student Investigation Sheet <a href="https://tinyurl.com/wws5yzq">https://tinyurl.com/wws5yzq</a>  - Teacher’s Guide <a href="https://tinyurl.com/w7qefyf">https://tinyurl.com/w7qefyf</a>  - Print:  - TE: Page 63  - SE: Page 38 <strong>Interactive examples</strong>  - Concept 2.1: Measuring Matter  - Digital: Beyond tab <a href="https://tinyurl.com/y3kjvnfm">https://tinyurl.com/y3kjvnfm</a>  - Concept 2.2 Changing Materials  - Digital: Activity 20; Observe Like a Scientist <a href="https://tinyurl.com/wvwv98v">https://tinyurl.com/wvwv98v</a></td>
</tr>
</tbody>
</table>
**Component**

**Strengths**

**Citations**

**Share/Elaborate and Evaluate:**
By presenting opportunities for critical thinking, exploration, and summative assessments, the Share (Elaborate) section connects STEM skills to real-world problems. Share with STEM is divided into two sections: STEM in Action and STEM Project Starters. Please note that STEM Connect is also part of the Discovery Education Comprehensive Science Program. STEM Connect includes real-world projects through a Challenge, Design, and Solve model of problem-solving.

**Activity Types**
There are various activity types, found within the model of Wonder/Learn/Share. These activities help students recognize opportunities to apply specific SEPs with DCI and CCC for three-dimensional learning.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Student Edition Label</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Can You Explain?" /></td>
<td>Students communicate prior knowledge to frame their learning.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Ask Questions Like a Scientist" /></td>
<td>Students begin to ask questions about the investigative phenomenon.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Observe Like a Scientist" /></td>
<td>Students make observations and connections across science ideas.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Analyze Like a Scientist" /></td>
<td>Students analyze and evaluate text to draw scientific explanations.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Investigate Like a Scientist" /></td>
<td>Students conduct investigations, collect data, and reflect on their new learning.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Evaluate Like a Scientist" /></td>
<td>Students demonstrate multidimensional learning by interpreting data, text, and images.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Interpret Data Like a Scientist" /></td>
<td>Students analyze graphical and numeric data.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Solve Problems Like a Scientist" /></td>
<td>Students apply scientific ideas to solve problems.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Design Solutions Like a Scientist" /></td>
<td>Students design solutions to real-world problems.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Record Evidence Like a Scientist" /></td>
<td>Students use evidence to construct scientific explanations of the investigative phenomenon.</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Think Like a Scientist" /></td>
<td>Students deepen core scientific ideas through reasoning activities.</td>
<td></td>
</tr>
</tbody>
</table>

**Share: Record Evidence example**
Grade 2: Unit 2: Materials from the Land

- Concept 2.1 Material Properties
  - Digital: Activity 25, Record Evidence Like a Scientist
  - Quick Code ca2295s
  - Teacher Note: [https://tinyurl.com/sa2q5zl](https://tinyurl.com/sa2q5zl)
  - Print:
    - TE: Page 90
    - SE: Page 62

**Share: STEM Project example**

**STEM in Action example**

- Concept 2.2: Changing Materials
  - Digital: Activity 25; Analyze Like a Scientist; Quick Code ca2345s
  - TE Page: 166
  - SE Page: 123

**STEM Project Starter example**

- Digital: Extension 1
  - [https://tinyurl.com/rbkkqqc](https://tinyurl.com/rbkkqqc)

**Activity Types**

- Print:
  - TE: Pages xxix
### Component: SW3. Quality of leveraging student prior knowledge and experiences

**Strengths:**
- Materials leverage students’ prior knowledge and experiences to motivate student learning in ways that:
  - make visible students’ prior knowledge and experiences related to the anchoring and investigative phenomena/problems and relevant SEPs, DCIs, and CCCs and EP&Cs (when applicable).
  - revisit students’ early ideas to see how they have changed (or not) as they figure out phenomena/solve problems.
  - make explicit links to new ideas and practices being developed by students.

The Wonder (Engage) section of each concept includes Technology Enhanced Items that have students identify what they already know about the topic. They receive feedback on their current knowledge, and the teacher has real-time access to this data in the Dashboard. Each concept also includes initial thoughts and ideas that might support the guiding question; this will appear at the bottom of the Wonder (Engage) page in the digital Techbook where it says “Can You Explain?”

Students use resources such as hands-on activities, images, songs, interactives, glossary animations, reading passages, and the Core Interactive Text to answer “Can You Explain” questions. They will keep track of their evidence using both print and digital supports in crafting their scientific explanations in each concept and can revisit their answer in their personal dashboard.

### Citations

**Wonder: Accessing Prior Knowledge example**

- **Grade 2: Unit 2: Materials from the Land**
- **Concept 2.2 Changing Materials**
  - **Digital:** Activity 4, Can You Explain? Quick Code ca2310s
  - **Print:**
    - TE: Page 118
    - SE: Page 80
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SW4. Quality of providing experiences that develop metacognition. | **Materials include learning experiences for students to:**  
  - Set and monitor their learning in light of the targeted learning goals  
  - Consider, overtime, what and how they have learned across the three dimensions  
  - Articulate how the three dimensions helped them figure out anchor and investigative phenomena/solve problems | **Concept Level Student Objectives**  
Grade 2: Unit 2: Materials from the Land  
Concept 2.1 Material Properties  
- Digital: [https://tinyurl.com/tzdc52v](https://tinyurl.com/tzdc52v)  
  Note: Make sure *Teacher View On*  
- Print:  
  - TE: Page 21  
  - SE: Page 7 |

**Monitoring Student Progress & Metacognition**  
Teachers are equipped with a Dashboard on the right-hand side of the screen that shows all student answers to responses from the Technology Enhanced Items (TEIs) embedded in the Student Interactive Worktext. Throughout the learning progression, each tab of each concept includes Technology Enhanced Items that have students connect to what they already know about the topic (Wonder), and then as they progress, to monitor what they do learn as they explore and learn through a variety of multimodal resources (Wonder, Learn, Share). They receive feedback on their knowledge, and the teacher has real-time access to this data in the Dashboard. This real-time data allows teachers to remediate and differentiate as needed in order to help students develop metacognitive abilities.
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW4. Quality of providing experiences that develop metacognition.</td>
<td>Each Concept includes initial thoughts and ideas that might support the guiding question; this will appear at the bottom of the Wonder (Engage) page in the digital program, “Can You Explain?”. Students are encouraged to think about what they know, how they know it and what they would like to learn more about. They do this by applying their learning across the three dimensions and revisit this learning at the end of the Concept. Their new learning is then linked to confirming or modifying their initial understanding of Anchor Phenomena from the Unit launch. Students use resources such as hands-on activities, images, songs, interactives, glossary animations, reading passages, and the Core Interactive Text to answer “Can You Explain” questions. They will keep track of their evidence using both print and digital supports in crafting their scientific explanations in each concept and can revisit their answer in their personal dashboard. <strong>Tools for All Types of Learners:</strong> Students can annotate text using highlighting and notes. These annotations remain at point of use for students and are automatically populated in a Notebook that students can use for reflections and for reviewing their learning. Studio is an excellent tool that also provides an opportunity for students to demonstrate learning and revisit as they move through learning progression. Templates are provided related to constructing explanations and carrying out investigations.</td>
</tr>
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<thead>
<tr>
<th>Results Dashboards</th>
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<tbody>
<tr>
<td>Video of Dashboard functionality:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools for All Types of Learners</th>
<th>Grade 2: Unit 2 Materials from the Land Concept 2.1 Material Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital:</td>
<td><a href="https://tinyurl.com/syeo2re">https://tinyurl.com/syeo2re</a></td>
</tr>
</tbody>
</table>

<p>| Step by Step Guide to Studio |  |
|-----------------------------|  |
| <a href="https://tinyurl.com/y8rt7us2">https://tinyurl.com/y8rt7us2</a> |  |</p>
<table>
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<tr>
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</table>
| SW5. Quality of providing equitable learning opportunities. | Materials ensure that all students, including those from nondominant groups and with diverse learning needs, have access to the targeted learning goals and experiences, including:  
- appropriate reading, writing, listening, and/or speaking alternatives for students who are English language learners, have special needs, read below the grade level, or have high interest and have already met the intended learning goals.  
- culturally relevant contexts and examples that support all students.  
- opportunities to cultivate interest and confidence as scientists and engineers for all students.  
California Science Techbook Program offers access to best-in-class content that meets instructional goals, inspires student engagement, and reflects the diversity of the students served. With California Science Techbook all students have full access to a robust science curriculum. | Reading Comprehension  
Concept 2:3 Materials in Design  
- Digital: Activity 12; Analyze Like a Scientist; Quick Code ca2391s  
- TE: Page 180  
- SE: Page 180  

Reading Passage
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SW5. Quality of providing equitable learning opportunities. | complementary use of images, videos, and audio, build students’ background knowledge and strengthen their comprehension. California Science Techbook provides a wide array of graphic organizers and visual supports offering non-linguistic opportunities to process content. Hands-on Activities and labs provide support for interacting with science concepts making learning visual. Additional, Hands-on Labs and non-fiction Reading Passages are found in the Beyond tab of each Concept providing related content for building students’ scientific understanding and development. The Reading Passages on a concept are written at different Lexiles. These passages offer different text structures such as problem-solution, cause and effect, and compare and contracts. Students not only learn to read these types of texts, but they are also used as mentor texts for writing. | Graphic Organizer  
Grade 2: Unit 2: Materials from the Land  
Concept 2.1 Material Properties  
- Digital: Activity 6, Evaluate Like a Scientist  
  Quick Code ca2264s  
- Print:  
  - TE: Page 44  
  - SE: Page R1 |
<table>
<thead>
<tr>
<th>Component</th>
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<th>Citations</th>
</tr>
</thead>
</table>
| SW5. Quality of providing equitable learning opportunities. | **Multilingual Support**  
Video, audio, and print text resources are available in a number of languages. Digital search filters help teachers and students identify resources in other languages. Additionally, the program is available digitally and in print in both English and authentically translated Spanish to support dual immersion programs.  
**English Language Development**  
California Science Techbook provides access to rich content and academic language in science. Throughout California Science Techbook ELA/ELD Standards and the California NGSS work in tandem to support the English learners. In California Science Techbook students build knowledge about science in variety of different ways, teachers are provided with point of use suggestions for meeting the needs of English Learner students with various levels of language acquisition including, Emerging, Expanding and Bridging. In addition, to the point of use lesson suggestions, tools and supports are embedded within the digital and print components to scaffold and support language and content.  
California Science Techbook supports the breadth and depth of students’ vocabulary acquisition through multiple representations. Students will see new academic language highlighted in context of the student edition in both the print and digital program. In the digital offering students can click on the word and several additional contextual supports are provided such as seeing the word in context of a sentence, viewing an image and/or video and a traditional definition. |  
**Spanish Translation**  
Grade 2: Unit 2 Materials from the Land  
Concept 2.1 Material Properties  
- Digital: [https://tinyurl.com/syeo2re](https://tinyurl.com/syeo2re)  
Spanish language option example |
<table>
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<tr>
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</thead>
</table>
| SW5. Quality of providing equitable learning opportunities. | **Discovery Education Experience**  
Saving the best for last, in addition to California Science Techbook, all students and teachers will have access to the Discovery Education Experience (formerly known as Streaming) and STEM Connect. Both programs provide access to rich content to extend and deepen students understanding.  
Through the Discovery Education Experience students have access to over 200,000 media assets to go as deep and wide as preferred. This includes:  
• appropriate reading, writing, listening, and/or speaking alternatives for students who are English language learners, have special needs, read below the grade level, or have high interest and have already met the intended learning goals;  
• culturally relevant contexts and examples that support all students; and,  
• opportunities to cultivate interest and confidence as scientists and engineers for all students.                                                                                           | Discovery Education Experience-Example Videos  
English Language Development Support  
Grade 2: Unit 2 Materials from the Land  
Concept 2.1 Material Properties  
**Unit Level**  
• Print:  
  • TE: Page 16                                                                                                                                  |
<table>
<thead>
<tr>
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<td>SW3. Quality of leveraging student prior knowledge and experiences.</td>
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<td>Concept Level</td>
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<td></td>
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<td>- Digital: <a href="https://tinyurl.com/slwhebj">https://tinyurl.com/slwhebj</a></td>
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<td>Note: Make sure Teacher View On</td>
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<td>- Print:</td>
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<td></td>
<td></td>
<td>- TE: Page 62</td>
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**Discovery Education Experience:**
- Check out the Instructional Inspiration Channel which includes ready to go, assignable Boards.
- Check out real world science with the MLB in The Science of Baseball Channel.
- Take your students to the Tundra to see the real world of Polar Bears through a Virtual Field Trip.