**Component**  |  **Strengths**  |  **Citations**
--- | --- | ---
**F1. Presence of Phenomena / Problems.** | **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. | **Grade 1: Unit 1: Plant Shapes**  
**Unit Page:**  
**Print:**  
- **TE Pages**  
- **SE Pages**  
**Anchor Phenomenon**  
Launch: p. 28
- **Anchor Phenomenon:**  
  - p. 2  
**Digital:**  
Enter Quick Code: ca007s
### F1. Presence of Phenomena / Problems.

#### Examples

**Grade 1 Unit 1**

**Unit Level Alignment:**
In this unit, students explore the characteristics of plants and explain how the different parts of plants work together to help the plant survive and reproduce. Students will first be introduced to the need for urban gardens to support healthy food options. They will make observations and collect data to describe different plants within a garden salad and the function of each structure of plants. Students will investigate plants in different ecosystems and make evidence-based arguments about how structures of plants function to use needed resources from the environment. They will use their understanding of the basic needs of plants to plan and conduct investigations that test plant growth under different conditions to explain the growth of hydroponic plants. Students will then investigate how humans help plants grow. They will conduct engineering activities to analyze problems with growing plants and evaluate the best solutions. At the end of the unit, students return to the anchor phenomenon to design a food garden to grow a variety of plants that could be used in pizza toppings.

**Investigative Phenomenon Examples:**

**Grade 1: Unit 1: Plant Shapes**
- **Concept 1: Plants with a Purpose:** Students will learn how different plants can still share similar parts, even if they differ in how they look.
- **Concept 2: Growing Plants:** Students will learn how parts of plants help them grow and live in different environments.

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| F1. Presence of Phenomena / Problems. | Examples **Grade 1 Unit 1**  
**Unit Level Alignment:** In this unit, students explore the characteristics of plants and explain how the different parts of plants work together to help the plant survive and reproduce. Students will first be introduced to the need for urban gardens to support healthy food options. They will make observations and collect data to describe different plants within a garden salad and the function of each structure of plants. Students will investigate plants in different ecosystems and make evidence-based arguments about how structures of plants function to use needed resources from the environment. They will use their understanding of the basic needs of plants to plan and conduct investigations that test plant growth under different conditions to explain the growth of hydroponic plants. Students will then investigate how humans help plants grow. They will conduct engineering activities to analyze problems with growing plants and evaluate the best solutions. At the end of the unit, students return to the anchor phenomenon to design a food garden to grow a variety of plants that could be used in pizza toppings. | Investigative Phenomenon Examples:  
Print:  
**Concept 1.1: Plants with a Purpose:** p. 26  
**Concept 1.1: Plants with a Purpose:** p. 8  
Digital:  
**Concept 1.1: Animal Needs:** Enter Quick Code: ca1011s |
<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: Designing for Plants: Students will learn how humans can help plants meet their needs by designing and building structures.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Phenomenon-Based Unit Assessments:</strong> Grade 1: Unit 1: Students apply the SEPs developed through the Unit to engage in a three dimensional Performance Based Assessment in which students will design a food garden for a variety of plants that could be used as pizza toppings.</td>
<td></td>
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<tr>
<td>Component</td>
<td>Strengths</td>
<td>Citations</td>
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<td>-----------------------------------------------------------------------------------------------</td>
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</tbody>
</table>
| F2. Presence of Three Dimensions. | The materials include the three dimensions, such that:  
• the DCIs, SEPs, and CCCs are present and have the potential to support student learning.  
• when engineering design is a learning focus, it is integrated with the appropriate dimensions (i.e., engineering is not isolated).  
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: | Course Level Alignments: https://tinyurl.com/y928r22b  
Grade 1 Unit 1: Plant Shapes  
• Unit Page  
Print:  
<table>
<thead>
<tr>
<th>TE Pages</th>
<th>SE Pages</th>
</tr>
</thead>
</table>
| Grade K, Vol 1, Scope & Sequence overview: p. xliii  
Unit 1: p. 1  
Three Dimensions p. 3 | Unit 1: p.1 |

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.
### 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.

Example: Grade 1: Unit 1: Students explore the characteristics of plants and explain how the different parts of plants work together to help the plant survive and reproduce. Students will first be introduced to the need for urban gardens to support healthy food options. They will make observations and collect data to describe different plants within a garden salad and the function of each structure of plants. Students will investigate plants in different ecosystems and make evidence-based arguments about how structures of plants function to use needed resources from the environment. They will use their understanding of the basic needs of plants to plan and conduct investigations that test plant growth under different conditions. Students will then investigate how humans help plants grow. They will conduct engineering activities to analyze problems with growing plants and evaluate the best solutions. At the end of the unit, students return to the anchor phenomenon to design a food garden to grow a variety of plants that could be used in pizza toppings.
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2. Presence of Three Dimensions.</td>
<td>Science and Engineering Practices are integrated as students use liquid glue to model and predict future impact of erosion on the Grand Canyon.</td>
<td>Unit Project Summative Assessment</td>
</tr>
</tbody>
</table>

**Anchor Phenomenon**

Need for Urban Gardens

Floodplains are places where people cannot find fresh food. In this unit, you will learn about different types of plants and how they grow. At the end of the unit, you will be able to use the information you learned to design an urban garden to grow fresh food.

Guiding Questions
1. How can we tell different types of plants apart?
2. How do those differences help the plants?

**Unit Project: Hands-On Engineering: Pizza Garden**

Students can complete this performance based assessment in small groups or individually. Provide students with the STEM Solution Saver card to set the context for the performance based assessment. Have students list some of their favorite pizza toppings and determine which come from plants and which do not.
### Component

| 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.

#### Print:
- **TE Pages**
  - Concept 1.1: p 19
  - Concept 1.2: p 81
  - Concept 1.3: p 147
- **SE Pages**
  - Concept 1.1: p 6
  - Concept 1.2: p 58
  - Concept 1.3: p 110

#### Digital:
- Unit Page: Enter Quick Code: ca106s

#### Concept Pages:
Within each concept, reference tagged activities in Learn and Share (Explore, Explain, and Elaborate) for additional evidence of three dimensions.

---

**Teacher Note**

In this activity, students communicate what they already know about the different ways plants change. Their thinking should include growing taller or wider, developing flowers to make seeds, and shed and grow new leaves. Challenge them to think about what they may have observed with their senses. How do plants change over time? For example, a grass plant has a different texture than a taller dead blade of the grass. Tor small buttercups grow slim and thinner, while the strawberry leaves have a black and yellow stem and a multi-thruster.

Students may have some initial ideas about how to answer the question (i.e., sample student response in the student written page) by the end of the concept. Students should be able to construct a scientific explanation, which includes evidence from the concept activities.

**Strategy**

Start with student observations. Plants change differently over time. The size, leaves, and other structures are different. Some will grow taller, while others grow wider. For correct some plants and grow other plants.

---

**Concepts and Standards**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Progression of Three Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept 1: Plants for a Purpose</td>
<td>Grade 1 &lt;br&gt; • L.SS-1.SS.2.LS.1 &lt;br&gt; • L.SS-1.SS.2.LS.3 &lt;br&gt; • L.SS-1.SS.2.LS.4 &lt;br&gt;</td>
</tr>
<tr>
<td>Concept 2: Growing Plants</td>
<td>Grade 2 &lt;br&gt; • PS.2.L &lt;br&gt; • DCI-3.C</td>
</tr>
<tr>
<td>Concept 3: Designing Plants</td>
<td>Grades K-2 &amp; 1-3</td>
</tr>
<tr>
<td>Concept 4: Assisting Plants</td>
<td>Grades K-2 &amp; 1-3</td>
</tr>
<tr>
<td>Concept 5: Plants for a Purpose</td>
<td>Grades K-3 &amp; 1-3</td>
</tr>
<tr>
<td>Concept 6: Plants for a Purpose</td>
<td>Grades K-3 &amp; 1-3</td>
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<tr>
<td>Component</td>
<td>Strengths</td>
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<tr>
<td>F2. Presence of Three</td>
<td>Pathways for Learning guidance provides options for students to meet the element level of the SEP and CCC in a variety of technology settings. Teacher reflection questions encourage reflection on students’ performance across the three dimensions.</td>
</tr>
<tr>
<td>Dimensions.</td>
<td></td>
</tr>
<tr>
<td><strong>Pathways to Learning</strong></td>
<td></td>
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<tr>
<td><strong>Print</strong></td>
<td>After viewing the video Fruits and Seeds as a class, hold up actual plants (or images of plants) and have students write explanations for why each one is or is not edible. Have students share their explanations with partners, then complete the check for understanding. Student pictures can be displayed in the classroom.</td>
</tr>
<tr>
<td><strong>Blended</strong></td>
<td>In small groups, have students view the video Fruits and Seeds. Students can also read the text following the video. Have small groups use the Whiteboard tool to illustrate a salad. Each student can add one item to the picture. Have groups share with the whole class, explaining each edible food part in the salad.</td>
</tr>
<tr>
<td><strong>Digital</strong></td>
<td>After viewing the video Fruits and Seeds, have students read the text following the video, using the highlights tool to mark the edible plants mentioned. Then, using the Whiteboard tool students can illustrate their salad and upload the picture.</td>
</tr>
<tr>
<td>Component</td>
<td>Strengths</td>
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</tbody>
</table>
| **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 | |

**Day 2**

*Activate Prior Knowledge*

**Day 2: Instructional Focus**

Students will learn how plant structures grow and change over time.

*Activity 4: Evaluate Like a Scientist*

**What Do You Know About Plants for a Purpose?**

NGSS Alignment

**1-LS3-1:** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

**Instructional Focus**

Students make observations to obtain evidence for an explanation of how young plants grow and change as they mature. They use models to represent the pattern of change in plant growth, and to relate plant structures to types of plants.

**Plant Changes**

**Strategy**

Allow students to think about the activity question and ask them to write down their reasoning for the responses they circled as well as the ones they do not allow students to revisit the question later in the unit and revise their answer.

**Print:**

<table>
<thead>
<tr>
<th>TE Pages</th>
<th>SE Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept 1.1: p. 35-37</td>
<td>Concept 1.1: p. 17-19</td>
</tr>
</tbody>
</table>

**Digital:**

<p>| Concept 1.1: ca1020s |</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| F2. Presence of Three Dimensions. | 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. | |

**Garden Salads**
Now that you have learned about the purpose of plants, look again at the picture of the Garden Salad. You first saw this in Wonder:

**Talk Together**
How can you describe Garden Salads now? How is your explanation different from before?
## F2. Presence of Three Dimensions.

### STRENGTHS

#### Materials (set per group):
- Pencils (12)
- Magnifying lens (12)
- Magnifying glass (12)

#### Instructional Focus:
Students conduct a collaborative investigation in which they select data to support their group's conclusions, such as which plants grow in the park. Students compare their plant data, then plot or graph pictures of some of the plants they think they can see easily.

**Planning and Carrying Out Investigations**

#### Activity Overview:

**What Will You Do?**

- **Materials Needed:**
  - Pencils (12)
  - Magnifying lens (12)
  - Magnifying glass (12)

**Activity Procedure: What Will You See?**

1. Visit your schoolyard or a nearby park. Students should look for different kinds of leaves and flowers. Students should also observe different types of animals, such as insects, birds, and small mammals.
2. Students will sort the leaves and flowers they find into groups.
3. Students will record their observations in a journal or notebook. Each group should write a summary of their findings and present it to the class.

**Analysis and Conclusions: What Will You Remember?**

- Students will compare their findings with those of other groups and discuss the similarities and differences. Students should also reflect on the importance of science in their daily lives.

**Hands-On Activity: Walk in the Park**

- Students will observe different kinds of leaves and flowers in the park. They will record their observations in a journal or notebook.

**Teacher's Guide**

**Science Techbook**

---

### CITATIONS

**1.1 | Learn**

**How Can We Group Plants?**

**Activity 7**

**Think Like a Scientist**

**Walk in the Park**

In this investigation, you will explore the outdoors and record your observations about trees, flowers, and leaves.

**What materials do you need?**

- Notebook
- Paper bag
- Pencils
- Magnifying glass
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| F3. Presence of Environmental Principles & Concepts (EP&Cs). | 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. | Grade K: Unit 1: Plant Shapes  
Print: Grade 1, Vol 1, Scope & Sequence overview: p. xliii  
Digital: https://tinyurl.com/y928r22b |

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.
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>F3. Presence of Environmental Principles &amp; Concepts (EP&amp;Cs).</td>
<td><strong>Concept Level Content:</strong> Grade 1: Unit 1: Concept 1.1 In this concept, students explore the lesson question in Learn, “How do different plants change over time? Throughout this lesson, students have opportunities to share their own observations about plants and have them use these observations to describe patterns in the natural world. For instance, this can be done as they observe the symmetry of a leaf, count the number of flower petals, or observe the arrangement of leaves on a tree branch.</td>
<td>Grade 1, Unit 1, Concept 1.1 Print</td>
</tr>
<tr>
<td></td>
<td>Concept 1.1 Learn p. 38</td>
<td>Concept 1.1 Learn p. 20</td>
</tr>
<tr>
<td></td>
<td>Digital: Enter Quick Code: ca1023s</td>
<td></td>
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</tbody>
</table>
### F4. Presence of a Logical Sequence of Learning.

<table>
<thead>
<tr>
<th>Component</th>
<th><strong>Strengths</strong></th>
<th><strong>Citations</strong></th>
</tr>
</thead>
</table>
| **Materials demonstrate appropriate sequencing of three dimensions when:** | | **Course Level Alignments:**
| • 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. | https://tinyurl.com/y5xbkfjv |
| • phenomenon or problems are linked to each other. | **Scope and Sequence and Three Dimensions Grade 1, Unit 1**
| | Print: |
| | **TE Pages** |
| | **Scope & Sequence overview** |
| | p. xxxviii-xlili |
| | **Three Dimensions** |
| | p. 4-5 |

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:
1st Grade: Unit 1 – Plant Shapes

**Concept 1.1 Plants for a Purpose**
- SEP Asking Questions and Defining Problems
- SEP Developing and Using Models
- SEP Planning and Carrying Out Investigations
- SEP Analyzing and Interpreting Data
- SEP Using Mathematics and Computational Thinking
- SEP Constructing Explanations and Designing
<table>
<thead>
<tr>
<th>Concept 1.2 Growing Plants</th>
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<tbody>
<tr>
<td>• SEP Asking Questions and Defining Problems</td>
</tr>
<tr>
<td>• SEP Developing and Using Models</td>
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<tr>
<td>• SEP Planning and Carrying Out Investigations</td>
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<tr>
<td>• SEP Analyzing and Interpreting Data</td>
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<tr>
<td>• SEP Using Mathematics and Computational Thinking</td>
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<tr>
<td>• SEP Constructing Explanations and Designing Solutions</td>
</tr>
<tr>
<td>• SEP Engaging in Argument from Evidence</td>
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<tr>
<td>• SEP Obtaining, Evaluating, and Communicating Information</td>
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<table>
<thead>
<tr>
<th>Concept 1.3 Designing for Plants</th>
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<tbody>
<tr>
<td>• SEP Asking Questions and Defining Problems</td>
</tr>
<tr>
<td>• SEP Developing and Using Models</td>
</tr>
<tr>
<td>• SEP Planning and Carrying Out Investigations</td>
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<td>• SEP Analyzing and Interpreting Data</td>
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<td>• SEP Obtaining, Evaluating, and Communicating Information</td>
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<td>Component</td>
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<td><strong>F4. Presence of a Logical Sequence of Learning.</strong></td>
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<tr>
<td>F4. Presence of a Logical Sequence of Learning.</td>
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**Activity 10:** Analyze Like a Scientist
- **Plant Characteristics**
  - **Activity 10**
    - **Student Edition Pages:** 30-33<br>**Teacher Edition:** 31
  - **Fruits and Seeds**
    - **Activity 12**
      - **Student Edition Page:** 31
### Designed for CA NGSS: Monitoring Student Progress

<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. | **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 1: Unit 1: Plant Shapes  
    - Print: TE: Pages 2-5  
    - Digital: Learn Tab: Quick Code: ca1023s |

California Science Techbook fosters a dynamic classroom environment where students interact with printed text, digital resources, and hands-on activities, all which create three-dimensional learning experiences. Each concept in California Science Techbook purposefully layers each dimension of the NGSS, so students can authentically demonstrate the SEPs and CCCs. Student progression against all three of the dimensions can be achieved through a system of assessment opportunities.

**EP&C’s and 3-Dimensional Learning**

[https://tinyurl.com/y928r22b](https://tinyurl.com/y928r22b)

**Technology Enhanced Item examples**

- Concept 1.1  
  - Digital: Activity 8; Observe Like a Scientist; Quick Code ca1025s  
  - Digital: How Does Your Garden Grow; [https://tinyurl.com/yd3fgapb](https://tinyurl.com/yd3fgapb)
<table>
<thead>
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<th>Component</th>
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<tbody>
<tr>
<td>SP1. Quality of supports for monitoring 3D learning and EP&amp;Cs integration.</td>
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<tr>
<th>Strengths</th>
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<tbody>
<tr>
<td><strong>Unit Level Alignment:</strong> Performance-Based Assessments (PBA):**</td>
</tr>
<tr>
<td>Students demonstrate three-dimensional learning through multiple</td>
</tr>
<tr>
<td>three-dimensional prompts associated with a common scenario. Teacher</td>
</tr>
<tr>
<td>Guides for each PBA describe the multidimensional nature of each item</td>
</tr>
<tr>
<td>and provide sample student responses.</td>
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</tbody>
</table>

| 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.

**Citations**

**Grade 1: Unit 1: Plant Shapes**
- Unit Level Performance Based Assessment example:
  - Digital: [https://tinyurl.com/y7sedmkl](https://tinyurl.com/y7sedmkl)
  - PBA Teachers Guide: [https://tinyurl.com/y8bqlz45](https://tinyurl.com/y8bqlz45)

Student and Teacher Learning Dashboards
- Video of Dashboard functionality: [https://tinyurl.com/y4chmhbz](https://tinyurl.com/y4chmhbz)
<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. | 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.  
  
**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 |           |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</thead>
<tbody>
<tr>
<td>SP1. Quality of supports for monitoring 3D learning and EP&amp;Cs integration.</td>
<td>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.</td>
<td></td>
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<td></td>
<td><strong>Online Interactive Models:</strong> 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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Hands-on Activity example</strong></td>
<td></td>
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<tr>
<td></td>
<td>Concept 1.1 Plants for a Purpose</td>
<td></td>
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<td></td>
<td>• Digital: Activity 7; Think Like a Scientist; Quick Code ca1023s</td>
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<td></td>
<td>• TE: Page 40</td>
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<td></td>
<td>• SE: Page 20</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Technology Enhanced Item examples</strong></td>
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<td>• Concept 1.1</td>
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<td></td>
<td>o Digital: Activity 8; Observe Like a Scientist; Quick Code ca1025s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Digital: How Does Your Garden Grow;</td>
<td></td>
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<tr>
<td></td>
<td><a href="https://tinyurl.com/yd3fgapb">https://tinyurl.com/yd3fgapb</a></td>
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<tr>
<td>Component</td>
<td>Strengths</td>
<td>Citations</td>
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<td>-----------</td>
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</tbody>
</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 1:1: Plants with a Purpose  
- Digital: Activity 19; Analyze Like a Scientist; Quick Code ca1042s  
- TE Page: 74  
- SE Page: 52  

STEM Project Starter example  
Concept 1:1: Plants with a Purpose  
- Digital: Extension 1  
  https://tinyurl.com/yctm9rj7  |
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<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.  | **Student and Teacher Learning Dashboards**  
  Video of Dashboard functionality:  
  - [https://tinyurl.com/y4chmhbz](https://tinyurl.com/y4chmhbz)                                                                                                                                                                                                                     |
### DISCOVERY EDUCATION NGSS TIME RESPONSE

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| **SP2. Quality of capturing student progress over time.** | academic standards. Student responses feed directly to 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**  
- Concept 1.1  
  - Digital: Activity 8; Observe Like a Scientist; Quick Code ca1025s  
  - Digital: How Does Your Garden Grow; [https://tinyurl.com/yd3fgapb](https://tinyurl.com/yd3fgapb) |

**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 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

Step By Step Guide to the Assessment Builder:  
<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>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 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></td>
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<tr>
<td>Component</td>
<td>Strengths</td>
<td>Citations</td>
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<td>-----------</td>
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</tbody>
</table>
| SP2. Quality of capturing student progress over time. | 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 Questions example**

Concept 1.1 Plants with a Purpose

- Digital: Activity 10; Analyze Like a Scientist
  Quick Code ca1028s
  Note: Make sure Teacher View On
- TE Page: 51

![Teacher Reflection Example](image-url)
## Component

<table>
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<tr>
<th>SP3. Quality of guidance and tools that use a variety of measures.</th>
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</table>

## Strengths

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

- **Concept 1.1**
  - Digital: Activity 8; Observe Like a Scientist; Quick Code ca1025s
    - Student Investigation Sheet
    - [https://tinyurl.com/y8x9vb](https://tinyurl.com/y8x9vb)
    - Teacher’s Guide
    - [https://tinyurl.com/yd5ehokx](https://tinyurl.com/yd5ehokx)
  - Print:
    - TE: Page 45
    - SE: Page 25
**SP3. Quality of guidance and tools that use a variety of measures.**

**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.

### Various Measures

**Student Objectives**
By the end of this lesson:
- I can make observations and contrast the parts of different plants.
- I can find patterns when comparing young plants and adult plants.

**Materials List (per group)**
- Pencils (E)
- Paper bags, lunch size (E)
- Hand lens

*Included in materials kit
(C) Consumable material

**Instructional Focus**
In this activity, students conduct a collaborative investigation in which they collect data on patterns in plant structures that can be used to make comparisons of different plants.

**Activity Activator**
Give students time to think about the types of plants they see around the school. If the students cannot think of the names of the plants, allow them to draw pictures of some of the plants they think they will see.

**Activity Procedure: What Will You Do?**
Walk in the Park can be completed in one class session. Allow students to observe actual plants at the school, encouraging students to describe how the plants they see are similar or different.

- Take students on a walk with a field journal and paper bag. Have them walk in pairs or threes to locate or do the following:
  1. Find two of the same flowers and sketch and label them.
  2. Find three different kinds of leaves and put them in the paper bag.
  3. Find two different trees. Write about ways they are different.
  4. Pick up three different kinds of seeds and put them in the bag.
  5. Have students compare and contrast plants, leaves, and seeds upon return (size, shape, color, texture, where found). Along the way, pick up some of the items to use in a variety of plants to compare upon return to the classroom.

**Analysis and Conclusions: Think About the Activity**
Allow students time to compare what their group found to the items found by other groups. Allow them to record what was similar and different from each group’s findings compared to their own. Ask students to use their observations to describe structures (flowers, seeds, leaves) that are similar or different in the same type of plant (tree, shrub, flower, etc.).
### Component
SP3. Quality of guidance and tools that use a variety of measures.

### Strengths
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.

### Citations
**Summative Assessment Grade 1: Unit 1: Plant Shapes**
- Unit Level Performance Based Assessment example:
  - Digital: [https://tinyurl.com/y7sedmkl](https://tinyurl.com/y7sedmkl)
  - PBA Teachers Guide: [https://tinyurl.com/y8bqlz45](https://tinyurl.com/y8bqlz45)

Note: Make sure Teacher View On

**Scientific Explanation Teacher Rubric**
[https://tinyurl.com/y6mmlhrz](https://tinyurl.com/y6mmlhrz)

---

**Scientific Explanations**

**What is a Scientific Explanation?**

Engaging in argument from evidence lies at the core of scientific practice. In science, the production of knowledge depends on a process of reasoning that requires a student to make a justified claim about the world (NRC, 2012). This process is modeled in the science classroom when students construct a scientific explanation. Scientific explanations are the basis of the NGSS. They are an important part of inquiry. To construct scientific explanations, students need to engage in a period of exploration and investigations in which they generate, collect, and analyze data and then use it to construct meaning. Student scientific explanations are integrated into the K-6 structure of Science Teckbook.

In Science Teckbook, the scientific explanation is inspired by Engage the Can You Explain (CYE) question? that requires students to answer a question about real-world phenomena. The Explorers section is framed to address this question and provide essential focus for their learning (NRC, 2009). In Grade 1, students construct their scientific explanation. Their scientific explanation is built around three components: the claim, the evidence, and the reasoning (adapted from MacNeil & Knigge, 2008).

**Claim:** This is a testable statement or conclusion that answers the question. The claim is often the simplest part of the explanation for students to both identify and formulate.

**Evidence:** This data helps to answer the question or problem that the students are examining. Data can come from a variety of sources, such as investigations (both numeric and observational data, text, archived data, video, and other media). The key to evidence is that it must be both appropriate and sufficient to support the claim. A good scientific explanation uses only data that supports the claim. The term sufficiency in this case refers to whether there is enough data to support the claim.

**Reasoning:** This is the justification that shows why the data is relevant and supports the claim. Students should try to include details related to the application of scientific principles and accurately incorporate discipline-specific vocabulary in this section.
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<th>Component</th>
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<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.</td>
<td></td>
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<td></td>
<td>STEM Connect 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. STEM Connect is built using a 4Cs STEM framework to allow students to develop the 21st-century skills of creativity, critical thinking, communication, and collaboration. Using STEM Connect 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>
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</table>

**Hands-on Activity example**  
Concept 1.1 Plants for a Purpose  
- Digital: Activity 7; Think Like a Scientist; Quick Code ca1023s  
- TE: Page 40  
- SE: Page 20  

[STEM Connect](https://tinyurl.com/ybfydc36)
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</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. | ![Step by Step Guide to Assessment Builder](http://bit.ly/2BCX85o)  
Step by Step Guide to Studio  
[https://tinyurl.com/y8rt7us2](https://tinyurl.com/y8rt7us2)  

Hugo, Kira, and Leah saw big blue barrels in the park. Now they want to see if they can use them to save water, too!
<table>
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<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</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 1: Unit 1: Plant Shapes  
• Unit Level Performance Based Assessment example:  
  o Digital: [https://tinyurl.com/y7sedmkI](https://tinyurl.com/y7sedmkI)  
  o PBA Teachers Guide:  
    [https://tinyurl.com/y8bqlz45](https://tinyurl.com/y8bqlz45)  
  Note: Make sure *Teacher View On*  
TEI translated into simplified Chinese using Google Translate. |
## Component

| SP5. Quality of use of formative and summative assessments. |

## Strengths

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.

## Citations

Peer Conversation Example

- Digital: Activity 7; Think Like a Scientist; Quick Code 1023s
- TE: Page 40
- SE: Page 20
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</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. The Discovery Education Studio creation tool allows students to create portfolios of their work over a course, unit, or concept. Students can collaborate with other students using the Studio tool, as well as share examples of their work with the teacher and their classmates. | **Explain activity example**  
- Digital: Activity 18; Record Evidence Like a Scientist; Quick Code c1041s  
- TE: Page 70  
- SE: Page 48                                                                                                                                                                                                                                           |
### Designed for CA NGSS: Teacher Support

<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</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). | Three Dimensions at a Glance  
Grade 1 Unit 1: Plant Shapes  
- Unit Page  
Print:  
<table>
<thead>
<tr>
<th>TE Pages</th>
<th>SE Pages</th>
</tr>
</thead>
</table>
| Grade K, Vol 1, Scope & Sequence overview: p. xliii  
Unit 1: p. 1  
Three Dimensions p. 3 | Unit 1: p.1 |

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
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</table>
| TS1. Phenomena/problems Driven Three-Dimensional Learning. | 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 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- | Grade 1: Unit 1: Plant Shapes Unit Page: Print: **Grade 1: Unit 1: Plant Shapes** | **Grade 1: Unit 1: Plant Shapes**
<p>| | | Unit Page: |
| | | <strong>Print:</strong> |
| | | TE Pages SE Pages |
| | | Anchor Phenomenon Anchor Phenomenon: |
| | | Launch: p. 12 p. 2 |
| | | Digital: Enter Quick Code: ca1006s |</p>
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS1. Phenomena/problems Driven Three-Dimensional Learning. | 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 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. **Teacher Guides:** 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. **Three-Dimensional Learning Supports:** 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 | Teacher Note
**Instructional Focus**
In this activity, students communicate what they already know about stability and change in plants over time based on prior observations and experiences.

**Strategy**
Encourage students to explain what they already know about the different ways plants change. Their thinking should include growing taller or wider, developing flowers or fruits, making seeds, or dying and decaying. Challenge them to relate what they may have observed with their senses to how plant parts change over time. For example, a green leaf on a plant has a different texture than a fallen dead leaf on the ground. A ripe banana has a green skin and a firmer texture, while an overly-ripe banana has a black and yellow skin and a mushy texture.

Students may have some initial ideas about how to answer the question (see sample student response in the student edition page). By the end of the concept, students should be able to construct a scientific explanation, which includes evidence from the concept activities.

Sample end of concept student response: Plants change differently over time. The size, shape, and color of leaves, stems, and flowers can be different. Some trees grow large, wide green leaves while others grow skinny leaves. You can eat some plants and not other plants.

Example Teacher’s Guide: Hands-on Labs
- Digital: Activity 12, Investigate Like a Scientist: Quick Code ca1317s
- Teacher’s Guide
  - [https://tinyurl.com/ybhqhcbv](https://tinyurl.com/ybhqhcbv)

Example Teacher Hands-On Activity Video
Concept 3.1 Weather Patterns
- Digital: Activity 12, Investigate Like a Scientist
  - [https://tinyurl.com/yd5kx7e2](https://tinyurl.com/yd5kx7e2)
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.

**Unit-Level Support**
- Unit Storyline and Outline: includes an overview of the instructional segment
- NGSS Chart: PEs listed by concept
- Three Dimensions at a Glance Chart: SEP, DCI, and CCC by concept
- ELA, ELD, and Mathematics Standards
- California EPCs

**Unit 1**

**Anchor Phenomenon: Get Started**

**Need for Urban Gardens**
Students will learn about different types of plants and how they grow. Students will be able to use the information learned to design an urban garden to grow fresh food in a food desert (a place where people cannot find fresh food).

**Unit Project Preview**

**Plant Garden**
Students will think about the different plants used in a place that could be grown in an urban garden.

**Concepts**

**Plants for a Purpose**
Students will learn how different plants can still share similar traits, even if they differ in how they look.

**Growing Plants**
Students will learn how parts of plants help them grow and live in different environments.

**Designing for Plants**
Students will learn how humans use to help plants meet their needs by designing and building structures.

**Unit Project Summative Assessment**

**Plant Garden**
In this activity, students will design a food garden for a variety of plants that could be used as juice toppings.
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
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</thead>
<tbody>
<tr>
<td>TS1.</td>
<td><strong>Concept-Level Support</strong></td>
<td><strong>Investigative Phenomenon Examples:</strong></td>
</tr>
<tr>
<td>Phenomena/</td>
<td>• Learning Objectives driven by the expectations of the NGSS</td>
<td>Print:</td>
</tr>
<tr>
<td>problems</td>
<td>• Days of Instruction:</td>
<td>TE Pages</td>
</tr>
<tr>
<td>Driven</td>
<td>○ Bolded text highlights the dimensions of the PE addressed during each</td>
<td>Concept 1.1: Plants with a Purpose:</td>
</tr>
<tr>
<td>Three-</td>
<td>○ Activity-level SEP and CCC integration</td>
<td>p. 26</td>
</tr>
<tr>
<td>Dimension</td>
<td>○ Pathways for Learning guidance for a variety of technology settings</td>
<td>Digital:</td>
</tr>
<tr>
<td>Learning.</td>
<td>○ Teacher reflection questions encourage reflection on students'</td>
<td>Concept 1.1: Animal Needs:</td>
</tr>
<tr>
<td></td>
<td>performance across the three dimensions of NGSS</td>
<td>Enter Quick Code: ca1011s</td>
</tr>
<tr>
<td></td>
<td>○ Embedded Teacher Notes describe strategies on how to create a</td>
<td></td>
</tr>
</tbody>
</table>
## Concept Pacing Options

### Model Lesson
In order to meet the expectations of the NGSS, students must complete each activity within the model lesson.

<table>
<thead>
<tr>
<th>Location</th>
<th>Days</th>
<th>Model Lesson Description</th>
<th>Time</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wonder</td>
<td>Day 1</td>
<td>Begin with the End In Mind</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Investigative Phenomenon</td>
<td></td>
<td>40 min.</td>
</tr>
<tr>
<td>Engage</td>
<td>Day 2</td>
<td>Activate Prior Knowledge</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td>Learn</td>
<td>Day 3</td>
<td>How Can We Group Plants?</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Day 4</td>
<td>How Are Plants the Same and Different?</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Day 5</td>
<td>What Plants Can We Eat?</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Day 6</td>
<td>How Are Young Plants and Their Parents the Same?</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td>Explore</td>
<td>Day 7</td>
<td>140 min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explain</td>
<td>Day 10</td>
<td>Scientific Explanation</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td>Elaborate</td>
<td>Day 11</td>
<td>STEM in Action</td>
<td>20 min.</td>
<td></td>
</tr>
<tr>
<td>Evaluate</td>
<td>Day 12</td>
<td>Review and Assess</td>
<td>20 min.</td>
<td></td>
</tr>
</tbody>
</table>

**Total Model Lesson Pacing:** 240 min.

### Express Lesson

<table>
<thead>
<tr>
<th>Location</th>
<th>Suggested Modification to Model Lesson</th>
<th>Time Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage</td>
<td>Day 1: Eliminate the Observe Like a Scientist activity using the image Red Peppers. Focus on using the Garden Salads Image.</td>
<td>20 min.</td>
</tr>
<tr>
<td>Explore</td>
<td>Day 2: Complete the literacy activity during the EIA block.</td>
<td>80 min.</td>
</tr>
<tr>
<td>Elaborate</td>
<td>Day 3: Complete the literacy activity during the EIA block.</td>
<td>30 min.</td>
</tr>
</tbody>
</table>

### Extended Lesson

<table>
<thead>
<tr>
<th>Location</th>
<th>Suggested Modification to Model Lesson</th>
<th>Time Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engage</td>
<td>Day 4: Extend student observations either on the nature walk or back in the classroom through the use of magnifying glasses to look for details in different plant parts.</td>
<td>80 min.</td>
</tr>
<tr>
<td>Explore</td>
<td>Day 5: Extend the Plant Characteristics activity by having students work in partners to complete a Venn Diagram to show their conclusions on grouping plants.</td>
<td></td>
</tr>
<tr>
<td>Elaborate</td>
<td>Day 6: Have students also complete the Hands-On Activity: Food Plants. Students can then begin observing various plant parts as the seed grows in the clear bag.</td>
<td></td>
</tr>
</tbody>
</table>

**Print:**
- TE: Pages 22
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS2. Coherence. | 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). | Next Generation Science Standards  
Grade 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
5E Model (Wonder, Learn, Share)  
Grade 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
- Print:  
- TE: Page 20 |

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.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Unit Level Support: Three Dimensions at a Glance:</td>
<td>Shows how each concept is aligned to the three-dimensional components of the performance expectations found within the unit.</td>
<td></td>
</tr>
<tr>
<td>Scope and Sequence:</td>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>NGSS Overviews:</td>
<td>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>

Three Dimensions at a Glance
Grade 1 Unit 1: Plant Shapes
- Unit Page
Print:
  - TE p. 3

Scope and Sequence
- Grade 1 Unit 1: Plant Shapes
- Print:
  - TE: Pages xliii
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS2. Coherence.    | **Concept Level Support:** 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. | California Common Core and ELD and EP&Cs Grade 1 Unit 1: Plant Shapes  
  ○ Print:  
    ▪ TE: Pages 4-7  
  Concept 1.1 Animal Needs  
  Print:  
  TE (Wonder): Page 19                                                                                                                                                                                                                                             |
## Component: TS3. Effective Teaching

### Strengths

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

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.

### Concepts at a Glance

**Grade 1: Unit 1: Plant Shapes**

**Concept 1.1 Plants for a Purpose**

- **Print:**
  - TE: Pages 20-24

![Concept at a Glance](image-url)
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS3. Effective Teaching.   | **Supporting 21\textsuperscript{st} 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**  
Grade 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
- **Print:**  
  - TE: Pages 22-23                                                                                                                                                                                                                                                                                                                                                   |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS3. Effective Teaching.  | **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**  
  **Concept 1.1 Plants with a Purpose**  
  - Digital: Activity 10; Analyze Like a Scientist  
    Quick Code: ca1028s  
    Note: Make sure Teacher View On  
  - TE Page: 51  
  **Example Embedded Strategy - Print TE** |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</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: Page xxvii |
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| TS3. Effective        | **Professional Learning Center:** 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.                                                                                      | **Professional Learning Center**  
  o  Digital:  
  o  [https://teachers.discoveryeducation.com/](https://teachers.discoveryeducation.com/)                                                                                                                                                                                                                                                                                                                                                                       |

#### Strengths:
- Teacher materials provide an array of strategies:
  - to support student access to the targeted learning goals, experiences, and performances.
  - that help teachers differentiate instruction.

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

### ELD Support
Grade 1: Unit 1: Plant Shapes

#### Unit Level
- Print: TE: Page 14

#### Concept Level
- Digital: Quick Code: ca1027s
- Note: Make sure Teacher View On
- Print: TE: Page 50
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS4. Support for Students with Diverse Learning Needs.</td>
<td></td>
<td><strong>Differentiation Strategies</strong>&lt;br&gt;Grade 1: Unit 1: Plant Shapes&lt;br&gt;Concept 1.1 Plants for a Purpose&lt;br&gt;▪ Digital: Quick Code: ca1030s&lt;br&gt;Note: Make sure Teacher View On&lt;br&gt;▪ Print:&lt;br&gt;  • TE: Page 55</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Student Misconceptions</strong>&lt;br&gt;Grade 1: Unit 1: Plant Shapes&lt;br&gt;Concept 1.1 Plants for a Purpose&lt;br&gt;▪ Digital: Quick Code: 1027s&lt;br&gt;Note: Make sure Teacher View On&lt;br&gt;▪ Print:&lt;br&gt;  • TE: Page 49</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Spanish language option example</strong></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.

### Station-Based Activities
**Grade 1: Unit 1: Plant Shapes**  
**Concept 1.1 Plants for a Purpose**
- **Digital:** Quick Code: c1025s
- **Print:**
  - TE: Page 45
<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. **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:** 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. | **Beyond tab**  
Grade 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
- Digital: [https://tinyurl.com/ybojstyd](https://tinyurl.com/ybojstyd)  

**Discovery Education Experience**  
- Digital: [https://tinyurl.com/yxms7kj](https://tinyurl.com/yxms7kj)  

**Pathways to Learning**  
Grade 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
- Print:  
  - TE: Page 24 |
<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.

- Learning how others are using Discovery Education
- Accessing and sharing resources
- Discussing instructional ideas
- Posing questions to the community
- Discuss ideas in real-time, connect with educators facing the same challenges, and earn badges for your Discovery Education activity.

**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 1: Unit 1: Plant Shapes Concept 1.1 Plants for a Purpose  
   - Print:  
     - TE: Pages 20  

**Summative Assessments** Grade 1: Unit 1: Plant Shapes  
- Unit Level Performance Based Assessment example:  
  - Digital: [https://tinyurl.com/y7sedmk1](https://tinyurl.com/y7sedmk1)  
  - PBA Teachers Guide: [https://tinyurl.com/y8bqlz45](https://tinyurl.com/y8bqlz45)  

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/y4chmhbz](https://tinyurl.com/y4chmhbz)  

---

**Teacher Dashboard**
<table>
<thead>
<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. | ![Image](https://example.com/assessment-builder)  
**Student and Teacher Learning Dashboards**  
Video of Dashboard functionality:  
- [https://tinyurl.com/y4chmhbz](https://tinyurl.com/y4chmhbz)  
**Teacher “Traffic Light Scoring” Dashboard**  
![Teacher “Traffic Light Scoring” Dashboard](https://example.com/traffic-light-dashboard) |
# SW1. Quality of opportunities to explain phenomena/solve problems.

**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.

## Investigative Phenomenon Examples:

### Print:

<table>
<thead>
<tr>
<th>Concept 1.1: Plants with a Purpose</th>
<th>p. 26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept 1.1: Plants with a Purpose</td>
<td>p. 8</td>
</tr>
</tbody>
</table>

### Digital:

<table>
<thead>
<tr>
<th>Concept 1.1: Animal Needs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter Quick Code: ca1011s</td>
</tr>
</tbody>
</table>
## Component

<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 1: Unit 1: Plant Shapes  
- Unit Level Performance Based Assessment example:  
  - Digital: [https://tinyurl.com/y7sedmk1](https://tinyurl.com/y7sedmk1)  
  - PBA Teachers Guide: [https://tinyurl.com/y8bqlz45](https://tinyurl.com/y8bqlz45)  
  Note: Make sure Teacher View On |
### Component

**SW2. Quality of building a three-dimensional conceptual framework.**

### Strengths

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.

### Citations

**Wonder: Can You Explain Example**

Grade 1: Unit 1: Plant Shapes

Concept 1.1 Plants for a Purpose

- **Print:**
  - TE: Pages 26
<table>
<thead>
<tr>
<th>Component</th>
<th>Strengths</th>
<th>Citations</th>
</tr>
</thead>
</table>
| SW2. Quality of building a three-dimensional conceptual framework. | **Wonder/Engage:** 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. **Learn/Explore:** 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. **Share/Explain:** 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. | **Learn: and Hands-On Investigation and Interactive**  
**Hands-on Activity example**  
Concept 1.1 Plants for a Purpose  
- Digital: Activity 7; Think Like a Scientist; Quick Code ca1023s  
- TE: Page 40  
- SE: Page 20  

**Technology Enhanced Item examples**  
- Concept 1.1  
  - Digital: Activity 8; Observe Like a Scientist; Quick Code ca1025s  
  - Digital: How Does Your Garden Grow; https://tinyurl.com/yd3fgapb |
**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.

### Share: Record Evidence example
- Digital: Activity 18; Record Evidence Like a Scientist; Quick Code c1041s
- TE: Page 70
- SE: Page 48

### STEM in Action example
**Concept 1:1: Plants with a Purpose**
- Digital: Activity 19; Analyze Like a Scientist; Quick Code ca1042s
- TE Page: 74
- SE Page: 52

### STEM Project Starter example
**Concept 1:1: Plants with a Purpose**
- Digital: Extension 1
  [https://tinyurl.com/yctm9rj7](https://tinyurl.com/yctm9rj7)
<table>
<thead>
<tr>
<th>Component</th>
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</table>
| SW3. Quality of leveraging student prior knowledge and experiences. | 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. | Wonder: Accessing Prior Knowledge example  
Grade 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
- Print:  
  - TE: Pages 26 |

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.
<table>
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</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 1: Unit 1: Plant Shapes  
Concept 1.1 Plants for a Purpose  
o Digital: Quickcode: ca1008S  
Note: Make sure Teacher View On  
o Print:  
- TE: Page 19  
- 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.

**Student Objectives**  
By the end of this lesson:  
- I can make observations and contrast the parts of different plants.  
- I can find patterns when comparing young plants and adult plants.
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<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.</td>
<td>Results Dashboards Video of Dashboard functionality: • <a href="https://tinyurl.com/y4chmhbz">https://tinyurl.com/y4chmhbz</a></td>
</tr>
<tr>
<td>Tools for All Types of Learners: 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.</td>
<td></td>
<td>Step by Step Guide to Studio • <a href="https://tinyurl.com/y8rt7us2">https://tinyurl.com/y8rt7us2</a></td>
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<tr>
<td>SW4. Quality of providing experiences that develop metacognition.</td>
<td>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>
<td>Step by Step Guide to Studio&lt;br&gt;• <a href="https://tinyurl.com/y8rt7us2">https://tinyurl.com/y8rt7us2</a></td>
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| 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 1.1 Plants for a Purpose**

- Digital: Activity 10; Analyze Like a Scientist; Quick Code ca1028s
- TE: Page 51
- SE: Page 30

**Reading Passage**

Plants are special because they make their own food. Plant leaves have pores that take in air.

The leaves also absorb light from the sun. Plant roots absorb water and nutrients from the soil. Plants use the power in sunlight to mix air and water and make their own food.
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<td>SW5. Quality of providing equitable learning opportunities.</td>
<td>Multiple forms of representation, including language alternatives; dual reading levels; and the 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.</td>
<td></td>
</tr>
<tr>
<td>Literacy Connections Cards</td>
<td>Literacy Connections Cards are integrated into the digital Techbook to save teachers time and create seamless opportunities to bring literacy into science and science into literacy. These cards, aligned to the Wonders and Benchmark reading programs, provide teachers with resources to make their</td>
<td></td>
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</table>
### Component | Strengths | Citations
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SW5. Quality of providing equitable learning opportunities. | reading and writing instructional multimodal, and integrate the reading and writing skills and strategies from their literacy curriculum into the science curriculum. |  |

**Literacy Connections Cards**

Literacy Connections Cards are integrated into the digital Techbook to save teachers time and create seamless opportunities to bring literacy into science and science into literacy. These cards, aligned to the Wonders and Benchmark reading programs, provide teachers with resources to make their reading and writing instructional multimodal, and integrate the reading and writing skills and strategies from their literacy curriculum into the science curriculum.

**Literacy Connections Cards**

The Discovery Education Literacy Connections Cards are designed to save teachers valuable planning time by bringing literacy into science and science into literacy. By aligning the Discovery Education Science units and concepts to the Wonders K-6 Literacy Curriculum, teachers can integrate reading and writing skills into science and also use robust, digital content to make their literacy instruction differentiated and multimodal.

Where are the Literacy Connections Cards?

Find the cards in the digital Science Techbook under the Intro tab, among the Teacher Planning Resources.

How do you use the Literacy Connections Cards?

The Literacy Connections Cards were developed by aligning the pacing of Wonders to the pacing of the Discovery Education Science program. Each of the Literacy Connections Cards has a corresponding Studio Board that can be accessed by scanning the QR code or typing the Quick Code in the digital Techbook. The code will take teachers to all the resources that are referenced on the Literacy Connections card.

**LITERATURE CONNECTIONS**

There are several resources in Discovery Education Experience that align to the Discovery Science program. These resources can be used as an instructional strategy called SOS. These resources can be utilized during the literacy block to provide multimodal experiences for students as they grow their reading, writing, speaking and listening skills.

**Literacy Connections**

The Literature Connections identify resources from Discovery Education Experience, and, if aligned, the science content, to the Wonders literature. Many of the resources will provide minilessons, small group or centers opportunities, complete with the content as well as an instructional strategy called SOS. These resources can be utilized during the Literacy block to provide multimodal experiences for students as they grow their reading, writing, speaking and listening skills.

**HOAs and Literacy Connections**

The Hands-On Activity and Literacy Connections sections bring the Wonders skills and strategies into science. There are specific suggestions for not only how to integrate the teaching of reading and writing into science, but also where in the science concept these skills and strategies will have the most impact.

Teachers will find ideas on how to bring literacy into each of the science lessons using engaging SOS and other literacy activities like sentence frames or the creation of flipbooks.
<table>
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</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 Spanish Translation

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**Spanish Translation**

¿Qué necesitan las plantas para crecer?

- Las plantas tienen muchas necesidades.
- Las plantas necesitan luz. Las plantas usan la luz para producir su alimento.
- Las plantas necesitan agua y minerales.
- La mayoría de las plantas usan sus raíces para obtener agua y minerales del suelo.

Raíces

- Las plantas necesitan aire.
- Las plantas necesitan una temperatura que no sea ni muy caliente ni muy fría.
- Las plantas no pueden sobrevivir mucho tiempo sin satisfacer todas estas necesidades.
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| SW5       | 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.                                      | Discovery Education Experience-Example Videos in Spanish  
|           | Discovery Education Experience                                                                                                                                                                           | o Digital: [https://tinyurl.com/vmq5bm](https://tinyurl.com/vmq5bm)                                                                                       |
|           | 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. | English Language Development Support  
|           | Through the Discovery Education Experience students have access to over 200,000 media assets to go as deep and wide as preferred. This includes:                                                            | Concept 1.1 Animal Needs  
|           | • 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; | Unit Level  
|           | • culturally relevant contexts and examples that support all students; and,                                                                                                                                | • Print:  
<p>|           | • opportunities to cultivate interest and confidence as scientists and engineers for all students.                                                                                                          | • TE: Page 14 |</p>
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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.