

## Science

**The preschool learning foundations for the science domain are aligned with:**

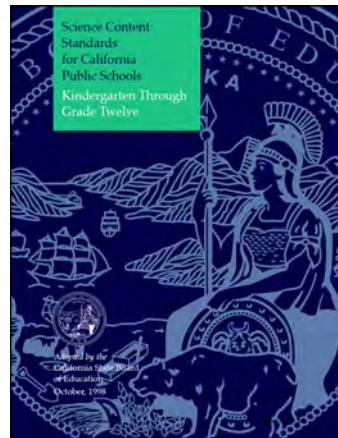
- *Science Content Standards for California Public Schools* (California Department of Education, 2000).
- *National Science Education Content Standards* (National Committee on Science Education Standards and Assessment and National Research Council 1996).

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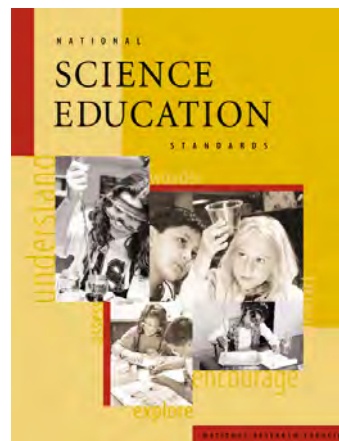
<http://www.cde.ca.gov/be/st/ss/index.asp>

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[http://www.nap.edu/openbook.php?record\\_id=4962&page=R1](http://www.nap.edu/openbook.php?record_id=4962&page=R1)

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## Summary: California Kindergarten Science Content Standards

### Physical Sciences

I. Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept:

- a) *Students know* objects can be described in terms of the materials they are made of (e.g., clay, cloth, paper) and their physical properties (e.g., color, size, shape, weight, texture, flexibility, attraction to magnets, floating, sinking).

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## Summary: California Kindergarten Science Content Standards

### Physical Sciences (continued)

- b) *Students know* stories sometimes give plants and animals attributes they do not really have.
- c) *Students know* how to identify major structures of common plants and animals (e.g. stems, leaves, roots, arms, wings, legs).

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## Summary: California Kindergarten Science Content Standards

### **Life Sciences**

2. Different types of plants and animals inhabit the earth. As a basis for understanding this concept:

- a) *Students know* how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).

## Summary: California Kindergarten Science Content Standards

### **Life Sciences (continued)**

- b) *Students know* stories sometimes give plants and animals attributes they do not really have.
- c) *Students know* how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).

## Summary: California Kindergarten Science Content Standards

### **Earth Sciences**

3. Earth is composed of land, air, and water. As a basis for understanding this concept:

- a) *Students know* characteristics of mountains, rivers, oceans, valleys, deserts, and local landforms.

## Summary: California Kindergarten Science Content Standards

### **Earth Sciences (continued)**

- b) *Students know* changes in weather occur from day to day and across seasons, affecting Earth and its inhabitants.
- c) *Students know* how to identify resources from Earth that are used in everyday life and understand that many resources can be conserved.

## Summary: California Kindergarten Science Content Standards

### **Investigation and Experimentation**

4. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations.

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## Summary: California Kindergarten Science Content Standards

### **Investigation and Experimentation**

4. Students will:

- a) Observe common objects by using five senses.
- b) Describe the properties of common objects.
- c) Describe the relative position of objects by using one reference (e.g., above or below).

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## Summary: California Kindergarten Science Content Standards

### **Investigation and Experimentation**

- d) Compare and sort common objects by one physical attribute (e.g., color, shape, texture, size, weight).
- e) Communicate observations orally and through drawings.

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## Preschool Science Foundations

### **Scientific Inquiry**

(skills and language related to science)

1.0 Observation and Investigation

2.0 Documentation and Communication

### **Physical Sciences**

1.0 Properties and Characteristics of Nonliving Objects and Materials

2.0 Changes in Nonliving Objects and Materials

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# Preschool Science Foundations

**Life Sciences**

- 1.0 Properties and Characteristics of Living Things
- 2.0 Changes in Living Things

**Earth Sciences**

- 1.0 Properties and Characteristics of Earth Materials and Objects
- 2.0 Changes in the Earth

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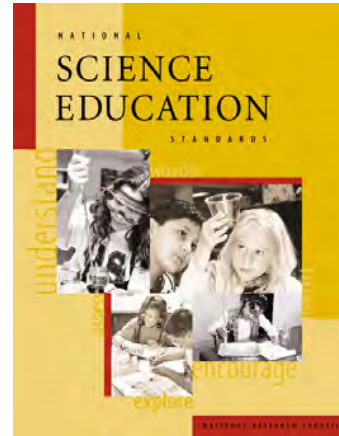
**Linking the Science Content Standards for California Public Schools, Kindergarten Through Grade Twelve, and the California Preschool Learning Foundations, Volume 3**

Physical Sciences		
<i>1. Properties of materials can be observed, measured, and predicted. As a basis for understanding this concept:</i>		
<i>a. Students know objects can be described in terms of the materials they are made of (e.g., clay, cloth, paper) and their physical properties (e.g., color, size, shape, weight, texture, flexibility, attraction to magnets, floating, sinking).</i>	<i>b. Students know water can be a liquid or a solid and can be made to change back and forth from one form to the other.</i>	<i>c. Students know water left in an open container evaporates (goes into the air) but water in a closed container does not.</i>
Strand(s), substrand(s), & foundation(s):	Strand(s), substrand(s), & foundation(s):	Strand(s), substrand(s), & foundation(s):

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[http://www.nap.edu/openbook.php?record\\_id=4962&page=R1](http://www.nap.edu/openbook.php?record_id=4962&page=R1)

## Summary: National Science Education Content Standards

### **Unifying Concepts and Processes**

- Systems, order, and organization
- Evidence, models, and explanation
- Change, constancy, and measurement
- Evolution and equilibrium
- Form and function

Summary: National Science Education  
Content Standards

**Science as Inquiry Standards**

- Abilities necessary to do scientific inquiry
- Understanding about scientific inquiry

**Physical Science Standards**

- Properties of objects and materials
- Position and motion of objects
- Light, heat, electricity, and magnetism

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Summary: National Science Education  
Content Standards

**Life Science Standards**

- Characteristics of organisms
- Life cycles of organisms
- Organisms and environments

**Earth and Space Science Standards**

- Properties of earth materials
- Objects in the sky
- Changes in earth and sky

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## Summary: National Science Education Content Standards

### **Science and Technology Standards**

- Abilities to distinguish between natural objects and objects made by humans
- Abilities of technological design
- Understandings about science and technology

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## Summary: National Science Education Content Standards

### **Science in Personal and Social Perspectives**

- Personal health
- Characteristics and changes in populations
- Types of resources
- Changes in environments
- Science and technology in local challenges

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## Summary: National Science Education Content Standards

### History and Nature of Science Standards

- Science as a human endeavor



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- What are some of the similarities and differences between these national standards and the California kindergarten science standards?



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- How has this review of the *National Science Education Content Standards* added to your understanding of the preschool science foundations, children’s development of skills and knowledge in the science domain, and the role of science in the preschool curriculum?

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**Linking the *National Science Education Content Standards* and the *California Preschool Learning Foundations, Volume 3***

Instructions: After reviewing the eight standards from the *National Science Education Content Standards*, identify some foundations from the science domain that relate to each standard.

Unifying Concepts and Processes	Science as Inquiry Standards	Physical Science Standards	Life Science Standards
<ul style="list-style-type: none"> <li>• Systems, order, and organization</li> <li>• Evidence, models, and explanation</li> <li>• Change, constancy, and measurement</li> <li>• Evolution and equilibrium</li> <li>• Form and function</li> </ul>	<ul style="list-style-type: none"> <li>• Abilities necessary to do scientific inquiry</li> <li>• Understanding about scientific inquiry</li> </ul>	<ul style="list-style-type: none"> <li>• Properties of objects and materials</li> <li>• Position and motion of objects</li> <li>• Light, heat, electricity, and magnetism</li> </ul>	<ul style="list-style-type: none"> <li>• Characteristics of organisms</li> <li>• Life cycles of organisms</li> <li>• Organisms and environments</li> </ul>
Strand(s), substrand(s), & foundation(s):	Strand(s), substrand(s), & foundation(s):	Strand(s), substrand(s), & foundation(s):	Strand(s), substrand(s), & foundation(s):

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- What stood out for you from the comparison of the *Science Content Standards for California Public Schools* and the science foundations in the *California Preschool Learning Foundations, Volume 3*?
- What were some of the main similarities and differences? What might be some reasons for these similarities and differences?

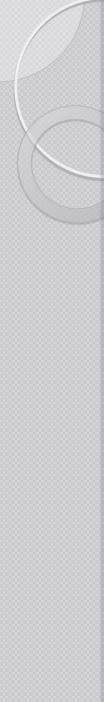
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- Why do you think it's important for preschool teachers to be knowledgeable about the kindergarten science content standards?
- What are key ideas from this learning experience that you'll keep in mind in your work as a preschool teacher?

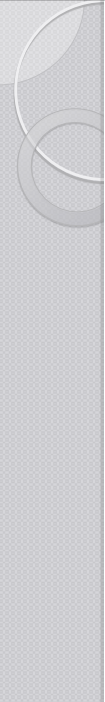
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- All 50 states and the District of Columbia have early learning guidelines.
- Guidelines can be found on the Early Learning & Development Standards Web site:  
[\(\[http://www.earlylearningguidelines-standards.org/content.php?s=what\\\_are\\\_elgs?\]\(http://www.earlylearningguidelines-standards.org/content.php?s=what\_are\_elgs?\)\)](http://www.earlylearningguidelines-standards.org/content.php?s=what_are_elgs?)

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## Science

**Develop a resource sheet:**

- State and what the guidelines are called
- Year the guidelines were developed or adopted
- Ages of children addressed
- Purpose and intended use(s)
- Inclusion of guiding principles
- Domains and subjects included

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### **Develop a resource sheet:**

- Summary of the guidelines for science
- Comparison with the preschool science foundations from the *California Preschool Learning Foundations, Volume 3*
- Information that helps you better understand the California preschool science foundations