



Science: Connecting to Our Own Experiences

Focus Statement

Students become familiar with the science foundations by identifying examples of the science domain content from childhood experiences, recent discoveries, and topics of interest.

Curriculum Alignment Project (CAP) Student Learning Outcomes

The Curriculum Alignment Project's (CAP) lower division eight courses and student learning outcomes are mapped onto each instructional guide learning experience. See Appendix A for the specific student learning outcomes, objectives, and examples of course content and topics for the courses listed below.

- Child, Family and Community
- Introduction to Curriculum
- Principles and Practices of Teaching Young Children
- Teaching in a Diverse Society
- Practicum-Field Experience

Instructional Methodologies

- Brainstorming
- Class discussion
- Creation of a visual representation
- Pairs or small groups

California Early Childhood Educator Competency Areas to Consider

The Faculty Initiative Project will undertake a comprehensive process in the future to map the content of the instructional guides to the California Department of Education, Early Education and Support Division's *California Early Childhood Educator Competencies*. The "Competency Areas to Consider" below are listed in this instructional guide as a preliminary exploration of how particular competency areas might be addressed through these learning experiences.



- Culture, Diversity, and Equity
- Family and Community Engagement
- Learning Environments and Curriculum
- Professionalism



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Before You Start

The introduction to the science domain tells us that “. . . scientific content in preschool should be based on children’s existing intuitive knowledge and interests related to science and on concepts children can explore directly in their everyday environment (*California Preschool Learning Foundations, Volume 3, p. 55*).”

This learning experience is intended to support students in recognizing that science is a part of our everyday lives, just as it is a part of the everyday lives of young children. The focus in this experience is on the three content strands of this domain: Physical Sciences, Life Sciences, and Earth Sciences. Connecting to the content of the Scientific Inquiry strand is done in this instructional guide in Learning Experience 2 of this domain titled “Connecting to Children’s Experiences with Scientific Inquiry Through Ramp Exploration.”

As instructors work through this learning experience, it might be helpful to acknowledge and affirm that students will have differing experiences and levels of knowledge relating to the strands being explored here. This is similar to what is found with children in the early care and education setting, and it will be important to point out to students that they have probably learned a great deal from each other in their conversations, as children will also in their explorations with other children and adults.

It will also be important to note and point out the role of language in these experiences and to think about what that might mean for dual language learners or for children with disabilities as they demonstrate the behaviors described in the foundations. Similarly, cultural and community backgrounds may shape the way in which children understand scientific concepts. Be familiar with the section in the introduction to this domain that begins on page 51 of the *California Preschool Learning Foundations, Volume 3* entitled “Individual, Cultural, and Linguistic Variations.” Instructors might see these variations in students as they work through this learning experience.

A sample handout, Handout 1, included with this learning experience, is for students use when listing examples from their experiences with the substrands in the science domain. An electronic version of this handout will be available when this instructional guide is online at www.wested.org/facultyinitiative.

Information Delivery

The second sentence in the introduction to the science foundations states “Young children, like scientists, have a sense of wonder and



natural curiosity about objects and events in their environment (*California Preschool Learning Foundations, Volume 3, p. 48*).”



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Explore the descriptions of the strands in the science domain that are presented in the introduction to the domain. These descriptions present the concepts that relate to “. . . children’s existing intuitive knowledge and interests related to science and on concepts children can explore directly in their everyday environment (*California Preschool Learning Foundations, Volume 3, p.55*).” This will help students understand the content of the domain in relation to the exercise and discussion in the “Active Learning” segment.



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Physical Sciences

The following descriptions will be found on pages 56 and 57 of the introduction to the science domain in the *California Preschool Learning Foundations, Volume 3*:

- Properties of objects, such as sound, light and shadow, weight, flexibility, and different materials, including solid and nonsolid substances
- Changes in objects such as taking apart, combining and mixing, changing from solid to liquid
- Movement of objects such as in pushing, rolling, throwing
- Relationship of properties to movement such as pushing heavy objects versus pushing light objects



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Life Sciences

The following descriptions can be found on pages 57 and 58 of the introduction to the science domain in the *California Preschool Learning Foundations, Volume 3*:

- Properties and characteristics of living things, such as the difference between living and nonliving things, appearances, habitats, behaviors, and changes and growth over time
- Beginning understanding that all living things (humans, plants, animals) have basic needs such as food and water



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Earth Sciences

The following descriptions can be found on pages 58 and 59 of the introduction to the science domain in the *California Preschool Learning Foundations, Volume 3*:

- Characteristics and properties of earth materials such as rocks, soil, air, and water in children’s immediate environments



- Exploration (observing, describing, and documenting) changes in the earth, including the tracking of objects in the sky such as the sun, moon, stars
- Tracking of weather and seasons

Active Learning



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Getting it started

Divide students into pairs or triads. Ask each pair or triad to work with the three strands of Earth Sciences, Physical Sciences, and Life Sciences.

Ask students to come up with some ideas in each domain for the following three categories that are on the handout:

1. Write down something they know about from their childhood in relation to these concepts.

For example, in relation to Earth Sciences, what do they know about objects in the sky, kinds of rocks, or what pollutes water or tides.

2. Briefly describe a recent discovery relating to the concepts in any of these three strands.

For example, in relation to Physical Sciences, they might have recently discovered how to move a heavy object or they might have discovered that moving around in a space such as an auditorium or classroom or changing locations affected the way they could hear something.

3. Briefly describe something they are curious about in relation to these concepts.

For example, in relation to the Life Sciences, they might wonder why there seem to be increasing numbers of coyotes in urban areas or about the nutritional value of the foods in some restaurants.

Keeping it going

Ask each pair or triad to make a list of as many examples as they can think of for each of these questions. Suggest that students take 10–15 minutes to complete this process. Ask students to write their examples on large Post-it® Notes so that they can be posted for all to read.

When they have finished this, organize their results for each domain for each question in some way so that everything is visible to all students. A large chart paper for each question in each strand would work for this.



When students can see all responses, ask the following questions:



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- Where are there similarities?
- Are there differences relating to experiences in urban, rural, coastal, or mountain settings or experiences?
- Which responses reflect experiences in formal schooling and which reflect experiences in everyday lives?
- Are values or cultural differences in beliefs about natural events and materials reflected in the responses?
- What do these responses suggest about working with these domains in early care and education settings?

Online Options

Students could post their completed handouts online. Students would then review all the handouts and write individual responses to the questions. These responses would be submitted to the instructor. If the class has online-discussion capability, an instructor led class discussion of the responses could occur online.

Taking it further

Ask students to develop a visual representation of one of their experiences. Each pair could choose one of their examples and do a drawing, painting, collage, sculpture or creation from any other media that might be available. Develop a gallery for display.



Exploring Our Personal Connections to Physical Sciences, Life Sciences, and Earth Sciences

	Something I learned as a child	Something I recently discovered	Something I am curious about
<p>Physical Sciences</p> <p>Substrand: Properties and Characteristics of Nonliving Objects and Materials</p> <p>Substrand: Changes in Nonliving Objects and Materials</p>			
<p>Life Sciences</p> <p>Substrand: Properties and Characteristics of Living Things</p> <p>Substrand: Changes in Living Things</p>			
<p>Earth Sciences</p> <p>Substrand: Properties and Characteristics of Earth Materials and Objects</p> <p>Substrand: Changes in the Earth</p>			

Science Domain:
Learning Experience 1
Handout 1 – Exploring our Personal Connections