

CHECKLIST OF CA SCIENCE STANDARDS FOR GRADE 4 ENVIRONMENTS

PURPOSE

The checklist is

- A sequential listing of instructional activities through each module.
- A place to document teaching and coverage of CA standards.
- A correlation tool showing where each CA standard is addressed.

Instructional sequence. The Checklist displays the sequence of instruction as the module progresses through 1) active investigation, 2) reading, and 3) assessment. The chart is broken out by investigation, part, and session number.

Most sessions start with active investigation, which may include teacher demonstration, hands-on activity, recording/writing in notebooks, class discussion, teacher explanation, and vocabulary reinforcement. Next students read, answer review questions, and discuss the reading. Finally, embedded assessments are completed, reviewed, and self-assessed. FOSS Teacher Guide and *Science Resources* book pages where CA standards are addressed are referenced through the instructional sequence.

Documentation of teaching and coverage. The Checklist helps teachers keep track of the class's progress through the module. Teachers can copy the Checklist and record the date of each instruction session. The completed Checklist can serve as a planning tool for teaching the module a second time.

Correlation with CA standards. The Checklist allows teachers to identify all the places in the teacher guide and *Science Resources* book where any specific CA standard is addressed. Teachers can quickly find the page references for any point in the instruction. The Checklist provides a table of evidence showing where the CA standards are addressed through multiple exposures and with a minimum of 20-25% hands-on activities integrated cohesively into the instruction.



FOSS AND CALIFORNIA STANDARDS

The **Environments Module** supports the following Life Sciences Content Standards for grade 4.*

LIFE SCIENCES

LS2. *All organisms need energy and matter to live and grow. As a basis for understanding this concept:*

- LS2a. *Students know* plants are the primary source of matter and energy entering most food chains.
- LS2b. *Students know* producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
- LS2c. *Students know* decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.

LS3. *Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:*

- LS3a. *Students know* ecosystems can be characterized by their living and nonliving components.
- LS3b. *Students know* in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
- LS3c. *Students know* many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.
- LS3d. *Students know* that most microorganisms do not cause disease and that many are beneficial.

The **Environments Module** supports the following Investigation and Experimentation Content Standards for grade 4.*

INVESTIGATION AND EXPERIMENTATION

I&E6 *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. Students will:*

- I&E6a Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.
- I&E6b Measure and estimate the weight, length, or volume of objects.
- I&E6c Formulate and justify predictions based on cause-and-effect relationships.
- I&E6d Conduct multiple trials to test a prediction and draw conclusions about the relationships between predictions and results.
- I&E6e Construct and interpret graphs from measurements.
- I&E6f Follow a set of written instructions for a scientific investigation.

**Science Content Standards for California Public Schools: Kindergarten through Grade Twelve* (Sacramento: California Department of Education, 2000).



Checklist of CA Science Standards for Environments Investigation 1

Content Standard Focus	Investigation 1: Terrestrial Environments	Teacher Guide (Science Resources) pages
LS3a, I&E6b	Part 1: Setting Up Terrariums—2 sessions	50–58 (77–79)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion	54
	Teacher presentation	54
	Small-group discussion	55
	Writing in notebook (Terrarium Map)	54–55
	Hands-on with terrarium set-up	55
	Teacher-led class discussion	56
	Teacher presentation	56
	Writing in notebook (Terrarium Map)	56
	Teacher-led class discussion	56
	Vocabulary instruction and content review	57
DATE OF INSTRUCTION	SESSION 2	
	Student reading with discussion questions	58 (77–79)
	Writing in notebook	58
LS3a, I&E6b	Part 2: Recording Changes—5–6 sessions	59–65 (80–91)
DATE OF INSTRUCTION	SESSIONS 1–4	
	Writing in notebook (Terrarium Observations)	61
	Hands-on with terrarium maintenance and observation	61–62
	Hands-on with terrarium plant measurement	62
	Vocabulary instruction and content review	62
	Embedded assessment—Response Sheet	62
DATE OF INSTRUCTION	SESSION 5	
	Student reading with discussion questions	63–64 (80–89)
	Writing in notebook	63–64
DATE OF INSTRUCTION	SESSION 6	
	Student summary reading with discussion questions	65 (90–91)
	Writing in notebook	65



ENVIRONMENTS CHECKLIST

Checklist of CA Science Standards for Environments Investigation 2

Content Standard Focus	Investigation 2: Isopods and Beetles	Teacher Guide (Science Resources) pages
LS3b, I&E6b	Part 1: Observing Organisms—2 sessions	85–91 (93–97)
DATE OF INSTRUCTION	SESSION 1	
	Teacher presentation	88
	Hands-on with isopods and beetles	88
	Teacher-led class discussion	89
	Small-group discussion	89
	Vocabulary instruction and content review	90
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	91 (93–97)
	Writing in notebook	91
LS3a, LS3b, I&E6a, I&E6f	Part 2: Organisms and the Nonliving Environment— 6 sessions	92–101 (98–106)
DATE OF INSTRUCTION	SESSIONS 1–4	
	Teacher-led class discussion	94
	Teacher presentation	94–95
	Hands-on with isopods and beetles in runways	95–96
	Writing in notebook (Animal Investigations)	95–96
	Teacher-led class discussion	96
	Teacher presentation	96
	Hands-on with isopods and beetles in runways	97–98
	Writing in notebook (Animal Investigations)	97–98
	Teacher-led class discussion	98
	Hands-on with terrarium set-up	98
	Vocabulary instruction and content review	99
DATE OF INSTRUCTION	SESSIONS 5–6	
	Student reading and discussion questions	100–101 (98–106)
	Writing in notebook	100–101
LS3c	Part 3: Organisms and the Living Environment— 2 sessions	102–107 (107–110)
DATE OF INSTRUCTION	SESSION 1	
	Teacher presentation	104
	View and discuss video (<i>What Is Pollination?</i>)	104
	Teacher-led class discussion	104
	Hands-on with looking for pollen on flowers	104
	Teacher presentation	105
	View, discuss video (<i>How Seeds Get Here...And There</i>)	105
	Teacher-led class discussion	105
	Hands-on (Field trip for seeds dispersed by animals)	105
	Vocabulary instruction and content review	106
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	107 (107–110)
	Writing in notebook	107



Checklist of CA Science Standards for Environments Investigation 2 (cont.)

Content Standard Focus	Investigation 2: Isopods and Beetles continued	Teacher Guide (Science Resources) pages
<i>LS3b, I&E6a, I&E6f</i>	<i>Part 4: Designing An Animal Investigation—4 sessions</i>	108–112 (111–113)
DATE OF INSTRUCTION	SESSIONS 1–2	
	Teacher-led class discussion	110
	Writing in notebook (Animal Investigations)	110–111
	Hands-on with individual projects and presentations	110–111
	Vocabulary instruction and content review	111
DATE OF INSTRUCTION	SESSION 3	
	Student summary reading with questions	112 (111–113)
	Writing in notebook	112
DATE OF INSTRUCTION	SESSION 4	
	Assess Progress—I-Check 2 and review	112



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Checklist of CA Science Standards for Environments Investigation 3

Content Standard Focus	Investigation 3: Aquatic Environments	Teacher Guide (Science Resources) pages
LS3a, LS3b	Part 1: Goldfish Aquariums—2 sessions	123–129 (115–119)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion	126
	Hands-on with aquariums and goldfish	126
	Writing in notebook (Goldfish Observations)	126
	Teacher-led class discussion	126
	Writing in notebook (Aquarium Log)	127
	Vocabulary instruction and content review	128
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	129 (115–119)
	Writing in notebook	129
LS3a, LS3b, I&E6c	Part 2: New Organisms—2 sessions	130–135 (120–122)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion	132
	Hands-on with aquariums and new organisms	132
	Writing in notebook (Aquatic environment observations)	132
	Teacher-led class discussion	132
	Teacher presentation	133
	Vocabulary instruction and content review	134
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	135 (120–122)
	Writing in notebook	135
LS2a, LS2b, LS2c	Part 3: Food Chains and Food Webs—2 sessions	136–143 (123–127)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion	138
	Hands-on with organism cards	138–139
	Teacher presentation	139–140
	Writing in notebook (Food chain practice)	140
	Teacher presentation	141
	Teacher-led class discussion	141
	Vocabulary instruction and content review	142
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	143 (123–127)
	Embedded assessment—Response Sheet	143



Checklist of CA Science Standards for Environments Investigation 3 (cont.)

Content Standard Focus	Investigation 3: Aquatic Environments continued	Teacher Guide (Science Resources) pages
<i>LS2a, LS2b, LS2c</i>	<i>Part 4: Kelp Forest Food Web—4 sessions</i>	<i>144–150 (128–134)</i>
DATE OF INSTRUCTION	SESSION 1	
	Teacher presentation	146
	Hands-on with organism cards	146–147
	Teacher presentation	147
	Hands-on with food webs	147
	Writing in notebook (Kelp Forest Food Web)	147
	Vocabulary instruction and content review	148
DATE OF INSTRUCTION	SESSION 2	
	Student reading with discussion questions	149 (128–131)
	Writing in notebook	149
DATE OF INSTRUCTION	SESSION 3	
	Student summary reading with questions	150 (132–134)
	Writing in notebook	150
DATE OF INSTRUCTION	SESSION 4	
	Assess Progress—I-Check 3 and review	150



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FOSS Checklist of CA Science Standards for Environments Investigation 4

Content Standard Focus	Investigation 4: Brine Shrimp Hatching	Teacher Guide (Science Resources) pages
LS3b, I&E6b, I&E6d, I&E6f	Part 1: Setting Up the Experiment—1 session	166–172
DATE OF INSTRUCTION	SESSION 1	
	Teacher presentation	169
	Teacher-led class discussion	170
	Teacher presentation	170
	Hands-on with setting up brine shrimp hatchery	171
	Writing in notebook (Brine shrimp hatching predictions)	171
	Vocabulary instruction and content review	172
LS3b, LS2b, I&E6d	Part 2: Determining Range of Tolerance—3 sessions	173–179 (136–142)
DATE OF INSTRUCTION	SESSIONS 1–2	
	Hands-on observing brine shrimp hatchery (3 days)	175–176
	Writing in notebook (Brine-Shrimp Hatching Observations)	176
	Teacher-led class discussion	177
	Teacher presentation	177
	Writing in notebook (Brine Shrimp-Hatching Conclusions)	177
	Vocabulary instruction and content review	178
DATE OF INSTRUCTION	SESSION 3	
	Student reading and discussion questions	179 (136–142)
	Writing in notebook	179
LS2c, LS3d, I&E6c	Part 3: Determining Viability—6 sessions	181–186 (143–148)
DATE OF INSTRUCTION	SESSIONS 1–3	
	Hands-on with brine shrimp observations	183
	Teacher-led class discussion	183
	Hands-on with brine shrimp environments	183–184
	Embedded Assessment—Response Sheet	184
	Vocabulary instruction and content review	184
DATE OF INSTRUCTION	SESSION 4	
	Student reading with discussion questions	185 (143–146)
	Writing in notebook	185
DATE OF INSTRUCTION	SESSION 5	
	Student summary reading with questions	186 (147–148)
	Writing in notebook	186
DATE OF INSTRUCTION	SESSION 6	
	Assess Progress—I-Check 4 and review	186



Checklist of CA Science Standards for Environments Investigation 5

Content Standard Focus	Investigation 5: Range of Tolerance	Teacher Guide (Science Resources) pages
LS3a, LS3b, I&E6b, I&E6d, I&E6e, I&E6f	Part 1: Water Tolerance and Plants—5 sessions	200–209 (150–152)
DATE OF INSTRUCTION	SESSIONS 1–4	
	Teacher-led class discussion	203
	Teacher presentation	203–205
	Hands-on with planters and observations over time	205
	Writing in notebook (Plant Observations)	206
	Teacher presentation	206
	Hands-on with plants*	206–207
	Writing in notebooks (Plant Observations)	207
	Teacher-led class discussion	207
	Vocabulary instruction and content review	208
DATE OF INSTRUCTION	SESSION 5	
	Student reading with discussion questions	209 (150–152)
	Writing in notebook	209
LS3a, LS3b, I&E6b, I&E6d, I&E6e, I&E6f	Part 2: Salt Tolerance and Plants—5–7 sessions	210–219 (153–157)
DATE OF INSTRUCTION	SESSIONS 1–5	
	Teacher presentation	214
	Teacher-led class discussion	214–215
	Hands-on with planting seeds*	215–217
	Writing in notebooks (Plant Observations)	216
	Writing in notebooks (Plant Profile)	217
	Teacher-led class discussion	217
	Writing in notebooks (Letter to Farmer Fernandez)	217
	Teacher-led class discussion	218
	Vocabulary instruction and content review	218
DATE OF INSTRUCTION	SESSION 6	
	Student reading and discussion questions	219 (153–157)
	Writing in notebook	219
DATE OF INSTRUCTION	SESSION 7	
	Assess Progress—I-Check 5 and review	219
LS3b	Part 3: Concluding the Module—2 sessions	220–223 (158–164)
DATE OF INSTRUCTION	SESSION 1	
	Student reading with discussion questions	222 (158–162)
	Student summary reading with questions	222 (163–164)
	Writing in notebook	222
DATE OF INSTRUCTION	SESSION 2	
	Assessment: Posttest	223