



Author(s): Gail M. Venezia			Lesson Title: Brine Shrimp			
Grade Span			ICLE Application Model			
K-4	5-8	9-12	A	B	C	D
X						X

Instructional Focus:

Listening:

Students listen for a variety of purposes appropriate to the grade level.

Tools and Technology: Students use appropriate tools and technologies to model, measure, and apply results in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Science as Inquiry:

Students demonstrate knowledge and skills necessary to perform scientific inquiry.

Habits of the Mind:

Students develop habits of the mind including curiosity, open-mindedness and persistence.

Communication:

Students communicate and apply scientific concepts.

Performance Task

Students will raise and observe brine shrimp. Study will include discussion of food chain.

- Using white paper, and a hand lens, pour a few brine shrimp eggs out on paper. Have the students use hand lens to observe the eggs. Have them predict what they might have in front of them. After some time to observe and predict, identify the item as brine shrimp. (They will guess they have pepper, dirt, cinnamon etc.) They will be surprised to hear it's actually eggs)
- Discussion of environment needed to sustain life for brine shrimp. Prepare water. Obtain gallon jar of aquarium water-fresh water. Add 1/2 cup of sea salt. Stir until dissolved. Aerate with air stone for 24 hours.
- Using the hand lens observe a sample of clear water and salt water. Discuss observations.
- Take out air stone. Begin to add eggs to the salt water. It will take any where from 1-4 days to see eggs hatch. Add algae culture after shrimp begin to hatch. Be sure algae are exposed to the light until you need to use it!
- Students should keep journals of shrimp development. Note whether eggs sink or float when added to jar. Note hours until hatch. Record temperature of water. Note percentage of hatch rate. Record any other significant happenings.
- Observe algae with hand lens. Give each student small amount to observe. Discuss that algae are small green plants. It will be food for shrimp. Discuss concept of food chain.
 - Algae, shrimp, fish, people.
 - People eat fish, fish eat shrimp, shrimp eat algae.
- Observe mature brine shrimp-observe legs, how do they swim? Behavior-alone or together? Do they prefer top, bottom or jar? Why do some shrimp swim with brown spots on their belly? What are these? (females with eggs)

Teacher Background Information:

Brine shrimp are invertebrates or arthropods which means they have Jointed Legs and an exoskeleton. Brine shrimp are crustacea, as are lobsters, crabs and crayfish. Brine shrimp can be found in oceans, and some inland areas such as Great Salt Lake in Utah. Brine shrimp eat algae, bacteria, and organic material. They are sensitive to light and put their undersides toward the light.

ICLE Essential Skills

Follow oral or written directions. (ela4)
Use writing as a tool for learning in formats such as learning logs, laboratory reports, note-taking, journals and portfolios. (ela40)
Know and apply the principles of scientific inquiry. <i>(Implicit in this statement are the processes of prediction, estimation, developing hypotheses, drawing conclusions, evaluation, and following ethical principles and professional procedures.) (s114 Not Ranked)</i>
Plan and apply real or hypothetical models and constructions to facilitate investigation and learning and the solution to practical problems. (s115 Not Ranked)
Know that reproduction is a characteristic of all living things as a function of cell division and species survival. (s9)
Make observations using senses and instruments. Inferences and interpretations are arrived at based on observations. Classify observable properties and organize observations in a meaningful and logical way. (s5)

Scoring Guide:

<p>Rate each of the following characteristic on a 3-0 basis, where 3=Excellent quality 2= Satisfactory quality 1=Unsatisfactory quality 0=Does not attempt or does not show skill/knowledge</p>	
Characteristic	Score
Student can make predictions about what brown substance is.	_____
Student can use hand lens for observation purposes.	_____
Students can follow all written and oral directions.	_____
Student can describe food for the shrimp as algae.	_____
Students will be able to predict that more shrimp reproduce from existing ones.	_____
Students will be able to keep a journal of observations.	_____

Keywords

English Language Arts	Mathematics	Science
Reading	Algebra	Earth Science Scientific inquiry Water
Writing Journals	Geometry	Life Science Behavior Light Temperature
Communications	Statistics	Chemistry Oxygen Salts
Literature	Calculus	Physics
Other	Trigonometry	Other Scientific Inquiry
	Other	

Picture, Chart, or Graph file name(s):

Name _____

Brine Shrimp Journal

Day 1: The Brine Shrimp Egg

Draw picture and write about it.

Day 2: Observe and draw picture of shrimp in jar culture.

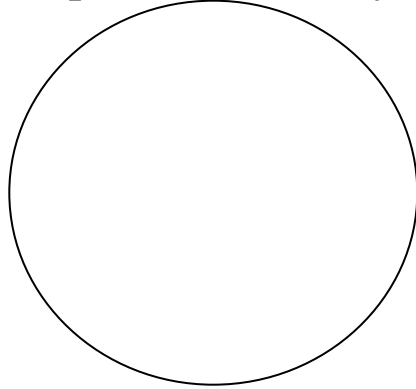
Day 3: Observe and draw picture of shrimp in jar culture.

Day 4: Observe and draw picture of shrimp in jar culture.

Name _____

Observation Sheet

In the circle below, draw a picture of what you see.



Make some predictions about what you think it is.

1. _____

2. _____

3. _____

Draw a picture of the Brine Shrimp you saw in the jar.

