



SALT WATER HOME



Grades 4-8

CREATE A SALTWATER ENVIRONMENT FOR BRINE SHRIMP

Students create an environment for brine shrimp and make observations.

CIAO!

10 min

Ciao is Italian for hello!

Greet your students. Be friendly. Use their name, ask a question, give a high five, or thumbs-up! Take roll. Mark down which students took a snack and tally how many snacks were given out.

STORY & SNACK

20 min

Read the story:

Today read the brine shrimp education pages and discuss.

SPORTS / GAMES

30 min

Materials:

- Basketball courts
- Basketballs

S.H.R.I.M.P.

Students will play S.H.R.I.M.P. A variation of the game H.O.R.S.E. Students will play to make baskets. Students who miss baskets receive a letter. The goal is to get as few letters as possible. The first person to receive all 6 letters is out, and so on.

Instructions- This game is best played with smaller groups. Depending on how many baskets there are, organize students evenly into one team per basket. Ideally this game is played with 5 or less players. If there aren't enough basketball hoops, buckets may be used in place of a hoop.

To play the game, students will decide on a set order that each student will have a turn to go. The first player can shoot the ball into the basket from anywhere on the court. If the first player misses, the second player can shoot from anywhere on the court. But if the first player makes it, the second player can try to shoot from the same place and in the same way as the first. If they make it, the third person shoots from the same place. If the second person misses, they receive a letter, and the third person can choose where they want to shoot from. The game will continue in this pattern. Once a player receives all the letters, they are out of the game. The game ends when one person remains.

STEM TIME

50 min

Create a saltwater environment for brine shrimp

Students create an environment in a test tube for brine shrimp and observe salt crystals under the microscope. Then students get to create an edible environment!



Materials:

- Salt
- Water
- Tedros test tubes with lids
- Pippi pipettes
- Scoopy spoons
- Meeka microscopes
- Petri dishes
- Markers
- Pencils

COOKING TIME!

30 min

DISMISSAL

10 min

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Instructions:

1. Watch the teacher prep videos before conducting the lab.
<https://www.youtube.com/watch?v=0tcHe00QnIU>
2. Show students the in-class video.
<https://www.youtube.com/watch?v=0ZfkoofLOE4>
3. Students use Pippi pipette to fill their Tedros test tubes with water up to 40 ml.
*Predict if the water level will go up when the students add the salt to the water.
Ask students to think about what the salt crystals will do in the water? Will they stay solid or will they dissolve and mix into the water?
Ask students to carefully watch the water level as they add the salt to observe what happens?
4. Students use Scoopy spoon to add one flat spoonful of salt to their water.
Students screw the lid onto Tedros test tube and shake (Let students jump and watch until all their salt dissolves. **Ask**, "Do you think we can get the salt back out of the water? Explain: Let students discuss ideas and then suggest that they could set up a small experiment to see if they could get the salt out of the water. Let students think up their own experiment and then prompt them to let some drops of salt water evaporate.
5. Dump the test tube into Mo the pitcher or large clear glass jar or other large clear plastic container (clean pretzel and snack containers work well) *Students can also create their own mini shrimp home in a clear plastic cup.
5. Students can make some lego sculptures for their brine shrimp to swim around and drop them into their new habitat. Shrimp will be introduced into the habitat later in the week. (Up to 30 students can help create one habitat so feel free to combine with another group of students to do the activity.)

Explain: We just saw how a solid (salt) can dissolve into the water and now we are going to get to dissolve some other solids into some hot water but these solids will create invisible chemical reactions that will change the water into a totally different substance! Instead of being liquid it will become a solid that we can eat. Chemical changes can not be reversed so once the water is Jello we can not turn it back into water again. Physical changes can be reversed, do you think adding salt to water is a chemical or physical change? Hint: Physical, water evaporates and leaves the salt behind!

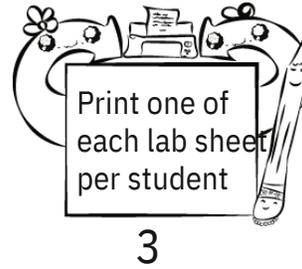
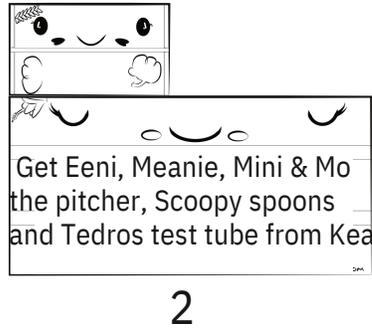
Instructions:

- Help the students make Jell-O according to the package directions. *Assist them with pouring the hot water from the microwave so that no one gets burned. Insure that the students stir the jello for the entire 2 minutes! Prompt them to take turns.
- Place a gummy shark or some gummy fish down in each cup like it is swimming.
- Pour Jell-O into each of the cups, divide according to your group size.
- Refrigerate the cups for 3 hours or until gelatin is completely set.
- Once the Jell-O is set, place Teddy Grahams in the life saver floats.

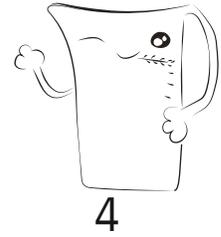
Growing Artemia NGSS- Plants and animals have internal structures that help them survive (From Molecules to Organisms: Structures and Processes 4-LS1-1). Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

- Students recreate the extreme living environment for their own brine shrimp to grow in.
- Students learn about how oceans differ from freshwater and brine environments like this one.

Lab Prep:



Fill Mo with tap water



Lab 1:



1. **Show the in-class Movie** (5 min).

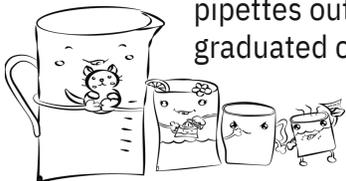
2. **Talk about The Great Salt Lake** (10 min) - This lake is the eighth saltiest bodies of water in the world and came from a prehistoric freshwater lake that covered over half of Utah called “Lake Bonneville”. Climate warmed and the lake water evaporated and concentrated the salt. Also, this is a terminal lake without an outlet stream with many streams bringing minerals in making the lake saltier. The lake is too salty for fish but is home to Artemia a “Brine Shrimp” that has adapted to live in this salty environment. Brine shrimp are able to monitor how much salt they allow in their body better than any organism in the world. They are a crustacean with a hard outer covering that does not allow salt in. The salt that gets in from eating is taken care of by a special stomach lining that absorbs it and pumps excess salt out their gills rather than letting it go through their whole body. They also have another mini salt pump on their neck. Let’s recreate this extreme salt water environment.



3. **Talk about the Lab tools** (5 min) - Show students how they will use Pippi the Pipette to measure out 40ml of water in Tedros the test tube. Talk about how ml is one unit of measurement that is good when measuring small amounts of liquids. Show students how they will carefully scoop out one spoonful of salt (the big end of the spoon). Make sure it is a level spoonful and not heaping. This is equivalent to 1/4 teaspoon of salt.



4. **Students get their tools. Set out the water and salt** (5 min) – Put the test tubes, spoons and pipettes out and let students walk through and get them. Use your Eenie, Meanie, and Minie graduated cylinders for salt and water stations at table groups. Use Mo to add water to the stations



5. **Work on Measuring Skills** (10 min) - Students follow their recipe to make “Mo’s Salt Lake Punch”. Students pour their test tube of salt water to the pitcher. Or keep it in their own small clear cup.

6. **Clean up** - (5 min) Return Pippi pipette and Scoopy spoon to their bag. Tedros will need a little rinsing out in the sink or bin with water. Once rinsed pile him back in his bag with the top off to dry.



7. **Read and Graph** (10 min) - Take a little time at the end to allow students to read and graph about the extreme environment they just created for their future baby shrimp.