CLAW At-Home Experiments: Crystallization of Borax

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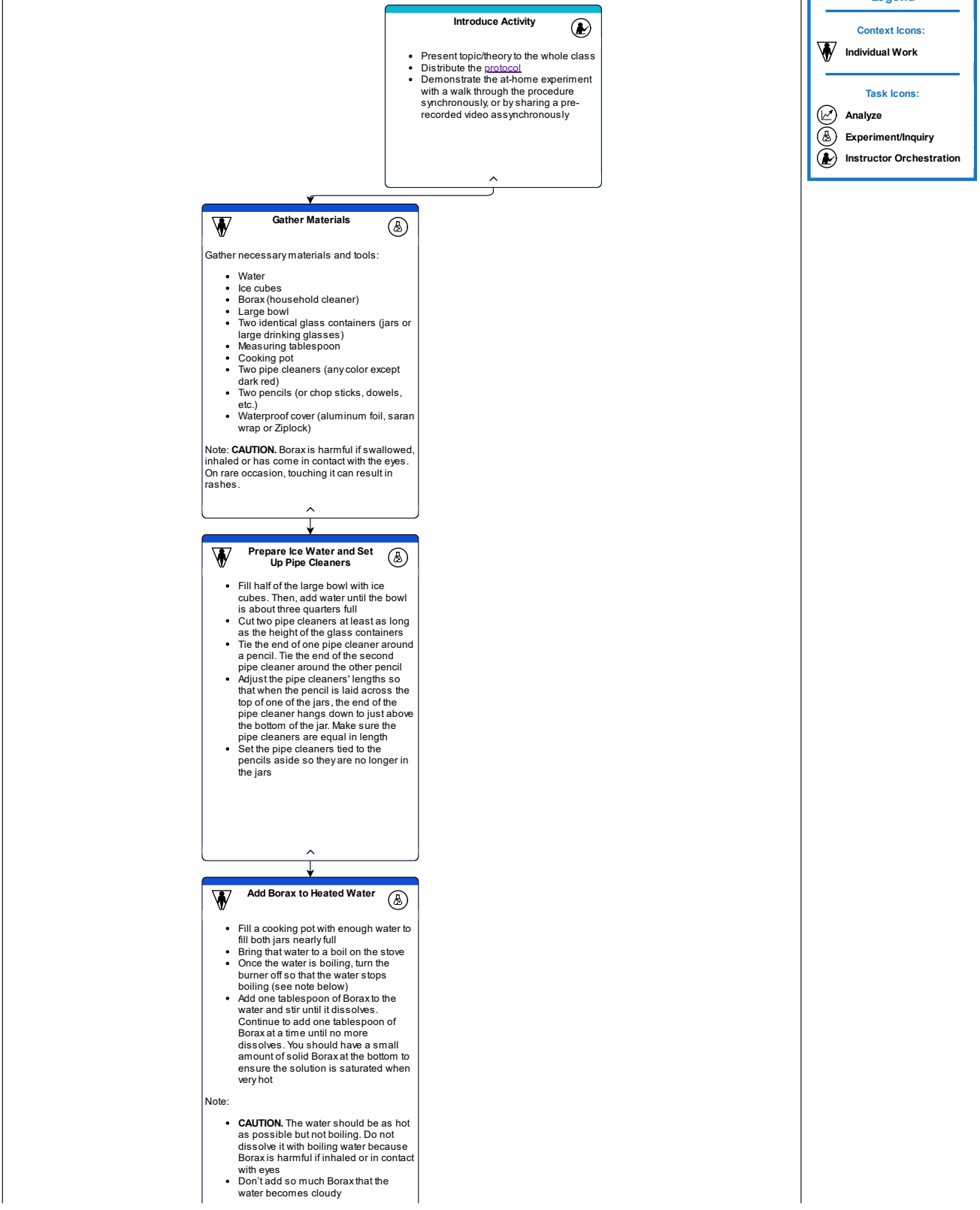
Description:

In this out-of-class activity, students will perform at-home experiment to qualitatively introduce the purifying technique of crystallization. See a full description here.

Out of Class (Instructor) | **Out of Class (Students)** | **In Class (Instructor)** | **In Class (Students)**



- You may need to heat the water again if dissolving the Borax takes more than 3 minutes

Place Heated Water and Pipe Cleaners in Jars

- Carefully, but quickly, pour equal amounts of the very hot saturated Borax solution (see note below) into the two jars until each jar is about three fourths full
- Lay a pencil across the top of each jar so that the pipe cleaner hangs down into the saturated solution, not touching the walls or bottom
- Shake them a little to get rid of any air bubbles

Note:

- It is important to avoid losing time, as the saturated solution must be as hot as possible when you add the pipe cleaners
- The part closest to the bottom usually ends up with more crystals than the part hanging near the surface of the solution

Cover and Place Jars in Different Environments

- Cover the top of the jars loosely with plastic wrap, aluminum foil or other material
- Leave one jar (called "Jar A") undisturbed on a countertop or table at room temperature
- Place the other jar (called "Jar B") in the bowl full of ice that you previously prepared

Note: If needed, adjust the water level in the bowl so that the water reaches at least three fourths the way up the jar, but is not so high that it goes into the jar.

Check on Crystal Formation during 5-hour Rest

- Do not disturb the jars for at least five hours
- Check the bowl of ice regularly and add ice if it has melted
- Check on both jars about once an hour to see how the crystals are forming

Note: It may be difficult to observe the jar in the bowl. Try looking at the pipe cleaner through the plastic wrap cover.

5 hr

Remove Pipe Cleaner and Take Pictures

- Carefully remove the pencils and observe the crystals on the pipe cleaners, after at least 5 hours
- Take a picture of the crystals from Jar A and Jar B and include them in your lab report
- Put the pipe cleaner of jar A back in the jar. After at least 24 hours, take a picture of the crystals from jar A

Note: **CAUTION.** Very carefully clean all the materials. Do not leave any trace of Borax on your kitchen utensils.

Complete Lab Report and Submit

- Finish data sheet and answer lab questions
- Answer post-lab questions
- Submit lab report to the instructor, with picture(s) of the experimental set up

Review and Discuss Lab Reports

- Review the student lab reports
- Discuss the results with the class