

3rd Grade

Franklin Lesson Link Cycle #3

Scientific Method : Emphasis on Conclusion

Recommended Time: 45 minutes

Background Knowledge:

Scientific vocabulary (p. 19 text)

Inquiry skills (pp. 19-23 text)

Scientific behaviors (*i.e. being careful in procedures*)

Copper Oxide makes a penny "dirty" ($\text{Cu}_2 + \text{O}_2 = 2\text{CuO}$)

There are chemicals in soap to clean

There is Citric Acid in Lemon Juice

Materials: 2 "dirty" pennies salty lemon juice paper towels
 2 cups soapy water forceps
 magnifying box hand lens

Introduction:

"Today we are going to use the scientific method to conduct a science experiment. Can anyone tell us the 6 steps in the scientific method?"

Review Scientific Method using chart.

Distribute Lab Report Sheet

Think Time and Guided/ Independent Practice:

"The first step as we said is "Question". Our question for this experiment is:

"Which is a better cleaner: Soapy water or Salty Lemon juice?"

Students put a checkmark next to "Question" step on Lab Report sheet

"The second step in the scientific Method is "Hypothesis". Remember a hypothesis is a prediction of what will happen in the experiment. In this experiment, there are 3 possible outcomes: The salty lemon juice is a better cleaner, the soapy water is a better cleaner or they are equal in cleaning strength. Talk to your lab partner about your hypothesis and reasons."

Student make predictions orally then share whole group. Students then write their hypothesis on their Lab Report.

Students put a checkmark next to "Hypothesis" step on Lab Report sheet

"The third step in the Scientific Method is Materials. For this experiment, lab partners will need 2 "dirty" pennies, 1 cup of salty lemon juice and 1 cup of soapy water. The reason why pennies are "dirty" is because of a chemical process called oxidation. The copper in the penny reacts with oxygen in the air and forms copper oxide which is darker in color than pure copper. ($\text{Cu}_2 + \text{O}_2 = 2\text{CuO}$)

Distribute cups of solution and "dirty" pennies

Students put a checkmark next to “Materials” step on Lab Report sheet

The fourth step in the Scientific Method is “Procedure”. The Procedure for this experiment is to place a “dirty” penny in each solution, wait 3 minutes and record your observations.

The fifth step in the Scientific Method is “Observations”. Let’s talk about some of the things you noticed while doing your “Procedure”.

Students share observations with lab partner.

Okay now you are going to record what you noticed during your “Procedure” on your Lab Report.

Students write down observations on Lab Report Sheet.

Students check off Observation

When you have finished recording your observations on the top pencil, meet me on the rug (sitting next to your lab partner).

Students assemble on rug sitting next to lab partners

The final step of the Scientific Method is “Conclusions”. This is where we record what we learned. Let’s tally the results of this experiment.

Tally results Salty Lemon Juice cleaned better than soapy water

According to our results, the Salty Lemon Juice is a better cleaner. Think back to your Hypothesis and determine if it was correct or incorrect and why or why not. Now discuss why you think the salty lemon juice cleaned better and what you learned from this experiment with your lab partner.

Teacher checks for understanding – (Chemicals in salty lemon juice takes off the oxygen in the Copper Oxide better than the chemicals in the soapy water.)

Now let’s share with the class what you learned.

Students share whole group about their learning.

Please return to your seats and record your conclusions on your Lab Report Sheet

Students fill in the sentence on the Lab Report “My hypothesis was _____ because...”

Students fill in the sentence on the Lab Report “I learned...”

Where Students might get stuck...

Hypothesis reasoning- solution= group sharing of ideas

Finishes procedure early- solution= make observations on other groups.

Understanding why salty lemon juice works better-solution= explain that chemicals in salty lemon juice takes off the oxygen in the Copper Oxide with drawing on the white board

Using forceps-solution= practice picking up objects with forceps before lab

Name _____ Date _____

Science Experiment Lab Report

Question: Which is a better cleaner: Soapy water or Salty lemon juice?

Hypothesis: I think the _____ will be a better cleaner because _____

Materials	2 “dirty” pennies	salty lemon juice
	2 cups	soapy water
	paper towel	forceps
	magnifying box	hand lens

Procedure

1. Place a “dirty” penny in soapy solution
2. Wait 3 min. and record observations
3. Repeat steps 1-2 with salty lemon solution

Observations The soapy water _____.

I noticed _____

The salty lemon juice _____.

I noticed _____

Conclusions My hypothesis was _____ because

I learned _____