

WATER LAB #1

Water Quality Inquiry

6.3S.1 Based on observations and science principles, propose questions or hypotheses that can be examined through scientific investigation. Design and conduct an investigation that uses appropriate tools and techniques to collect relevant data.

Question/Problem

Research

Hypothesis/Prediction

Experiment

Data/Results

Conclusions

Reflection

MATERIALS:

- Water sample from two different water sources
- pH kits
- Dissolved Oxygen kits

QUESTION/PROBLEM

Present students with two water samples and ask: "What type of inquiry can we do with our two samples?"

Try to get the class to create the question/problem for the investigation.

SAMPLE:

How is water quality different between the two samples given?

RESEARCH

Have students read about pH and dissolved oxygen and how they affect water quality. Discuss the terms in groups and make sure students include what they have learned in their lab write-up prior to making their predictions for the lab.

HYPOTHESIS/PREDICTION

Have each student write a prediction to the question posed. Have the students discuss in groups how they think the water quality may differ and then write their own prediction.

Remember to have them include their reasoning since a hypothesis is an **educated guess**.

EXPERIMENT

Have students list the materials being used and then create a step-by-step procedure that each group will follow to maintain the integrity of the inquiry process.

EXAMPLE:

Procedure:

1. Label water samples "#1" and "#2."
2. Fill pH container to "fill" line with water sample #1.
3. Add three drops of pH indicator solution to water sample #1.
4. Shake water sample gently and compare with pH chart.
5. Record results.
6. Rinse pH container prior to adding water sample #2.
7. Fill pH container to "fill" line with water sample #2.
8. Add three drops of pH indicator solution to water sample #2.
9. Shake water sample gently and compare with pH chart.

PROCEDURES CONTINUED:

10. Record results.
11. Fill dissolved oxygen container to “fill” line with water sample #1.
12. Add number of drops indicated on kit to water sample #1.
13. Shake water sample gently and compare with dissolved oxygen chart.
14. Record results.
15. Rinse dissolved oxygen container prior to adding water sample #2.
16. Fill dissolved oxygen container to “fill” line with water sample #2.
17. Add same number of drops indicated on kit to water sample #2.
18. Shake water sample gently and compare with dissolved oxygen chart.
19. Record results.

DATA/RESULTS

Have students use chart to record data collected.

WATER SAMPLE SOURCE	pH	Dissolved Oxygen
Sample #1		
Sample #2		

CONCLUSIONS

Have groups discuss their results and share out to the class. Did all groups get the same results? Why or why not? Discuss the original question and how it relates to where the water samples were collected. What kind of conclusions can be made about the water quality and the organisms that rely on that water source for life?

Each student should then write a conclusion to the experiment that includes their results and how water quality is a factor for species living in and near that water source.

REFLECTION

Have students discuss what other questions they may now have about the water sources and the quality of life in and around the water source. If you were to do this experiment again, or work with this water sample, what other questions do you have? What would you do differently? What else would you like to know about this water source in relationship to the quality of the water?