Dissolved Oxygen on the Elwha

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Presentation Outline

- Introduction: Our Preliminary research that lead to our hypothesis
- Methods: The materials we used and how we sent up our experiment
- Results: The data table, graph, and statistical analysis
- Discussion: Why we got these results

Library Research

- Dissolved oxygen can get in the water by aeration, Diffusion from the surrounding air, and as a waste product of photosynthesis
- Optimal D.O. level is 9 milligrams per liter
- Levels less than 3 mg/L are fatal to fish
- Levels between 3mg/L and 5mg/L put life under stress
- Levels shouldn't exceed 110%

Benefits of Research

Our research will benefit the scientific world by showing if the water above the dams is safe for the salmon.

Research Question

Is the dissolved oxygen level higher at the Mouth of the Elwha or at Lake Mills?

Hypothesis

We predict that the D.O. level is higher at the Mouth of the Elwha. We made this prediction because the water at the Mouth is much more aerated. The manipulated variable is the location, the controlled variables are the equipment, the method, and the time of test, and the responding variable are the D.O. levels.

Null Hypothesis

Our null hypothesis is that there will be no difference in dissolved oxygen levels at the Mouth of the Elwha an Lake Mills.

Materials

- One Dissolved Oxygen Kit
- One Towel
- At least one pair of goggles
- At least one pair of rubber gloves
- One waste container
- One data table, pencil

Methods

1. Assemble materials.
2. Choose test sites.
3. Fill glass vial to brim with water from test site; **make sure there are <u>no</u> air bubbles.**
4. Add <u>one</u> oxygen one packet to water; shake vigorously.
5. Add <u>one</u> packet of oxygen two to solution; shake vigorously.
6. Let solution sit until orange particles settle below line.

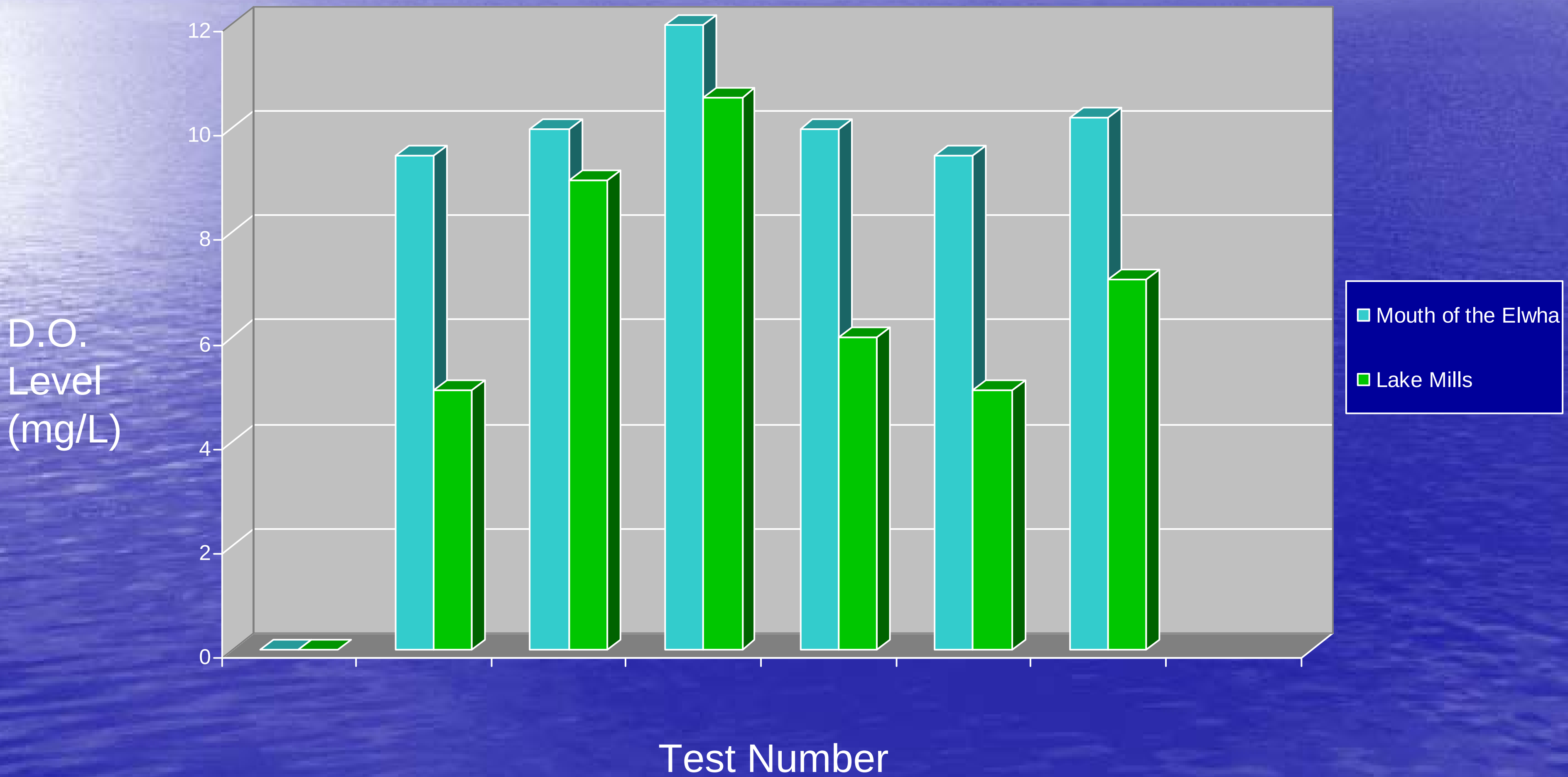
Methods (Continued)

7. Add <u>one</u> packet of oxygen three to solution; shake vigorously.
8. Pour solution into measure tube until brim
9. Place solution from first vial into waste container.
10. Place solution from measure tube into the third vial.
11. Add oxygen four drops until solution is clear; **<u>count drops!</u>**
12. Repeat steps 2-10 four more times; record measurements.

Results

Test Number	Level at Mouth of Elwha (mg/L)	Level at Lake Mills (mg/L)
1	9.5	5
2	10	9
3	12	10.6
4	10	6
5	9.5	5
Average	10.2	7.12
Range	2.5	5.5

Graph



D.O.
Level
(mg/L)
12
10
8
6
4
2
0
Mouth of the Elwha
Lake Mills
Test Number

Statistical Data

- P - Value = 0.81

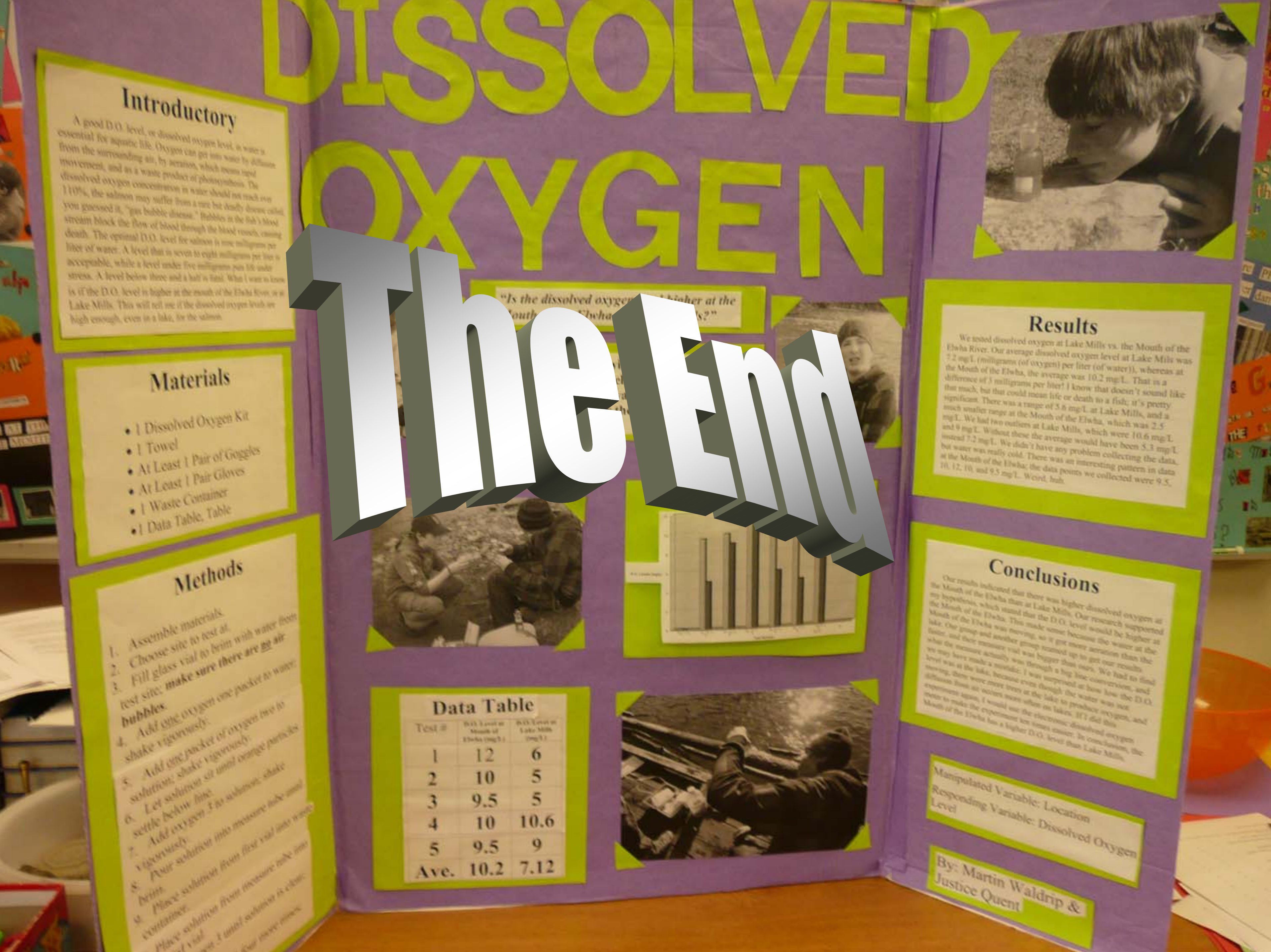
There is a 81% chance of seeing data like this if the null hypothesis is true.

Discussion

- The dissolved oxygen level is higher at the Mouth of the Elwha
- The water at the Mouth was much more aerated than Lake Mills
- More open to fish

Next Step

If I had the chance to do this test again, I would take a ton more tests, and use an electronic dissolved oxygen meter to measure with.


The End
DISSOLVED
OXYGEN
Introductory
Materials
• 1 Dissolved Oxygen Kit
• 1 Towel
• At Least 1 Pair of Goggles
• At Least 1 Pair Gloves
• 1 Waste Container
• 1 Data Table, Table
Methods
1. Assemble materials.
2. Choose site to test at.
Results
Conclusions
Data Table
Test #
1 12 6
2 10 5
3 9.5 5
4 10 10.6
5 9.5 9
Ave. 10.2 7.12
Manipulated Variable: Location
Responding Variable: Dissolved Oxygen Level
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