

Plan For The Week Students Template

Plan for the week of: April 20 - April 24

At the end of the week you will know, understand, and/or be able to do the following:

I can use mathematics and statistics to analyze data.
I can use tables and graphs to display and analyze data.
I can communicate findings clearly and persuasively.
I can defend my explanation.

Why does this learning matter?

You will be able to use cross cutting concepts that span all subject areas and engage in science and engineering practices.

The plan for the week :

- Monday: Read the Data Nugget Research Background "Coral bleaching and climate change", answer the scientific question and underline the hypothesis.
- Tuesday: Answer the questions on Check for Understanding.
- Wednesday: page 4 : Select the level that is most appropriate for your current skills and complete the graphing portion. You only need to do one of these graphs. Start with Level C and see if you can complete the graph. If that is beyond your current skills then look at Level B or Level A. The graphs are not labeled as A, B, or C but you can tell the difference by the following:
Level A: Make observations of a completed graph
Level B: Complete a graph that has the x and y axes labeled and intervals already selected
Level C: Complete the graph on a blank graph
- Thursday: Answer the Interpret the Data questions on pages 5 & 6. I included Sentence Starters: Claim, Evidence, Reasoning to help shape your response.
- Friday: Scientific method practice worksheet: Understanding Hypotheses pg 7 & 8

Who To Ask For Help and How To Reach Them

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DATA *Nugget*

Coral bleaching and climate change

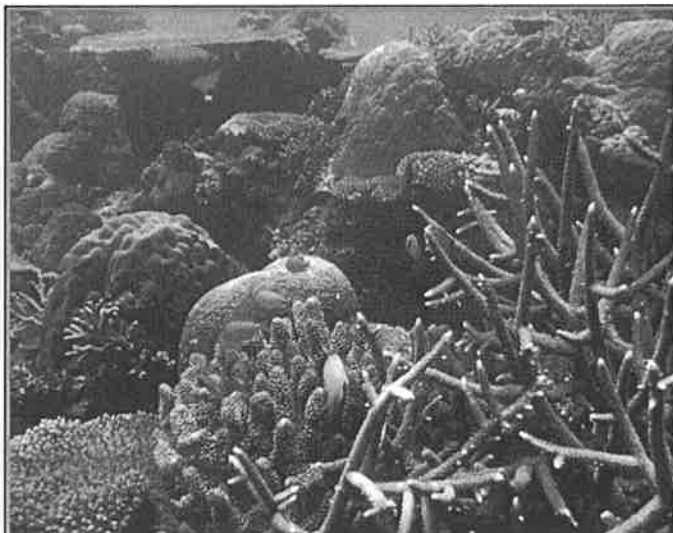
Featured scientist: Carly Kenkel from The University of Texas at Austin

Research Background:

Corals are animals that build coral reefs. Coral reefs are home to many species of animals – fish, sharks, sea turtles, and anemones all use corals for habitat! Corals are white, but they look brown and green because certain types of algae live inside them. Algae, like plants, use the sun's energy to make food. The algae that live inside the corals' cells are tiny and produce more sugars than they themselves need. The extra sugars become food for the corals. At the same time, the corals provide the algae a safe home. The algae and corals coexist in a relationship where each partner benefits the other, called a **mutualism**: these species do better together than they would alone.

When the water gets too warm, the algae can no longer live inside corals, so they leave. The corals then turn from green to white, called **coral bleaching**. Climate change has been causing the Earth's air and oceans to get warmer. With warmer oceans, coral bleaching is becoming more widespread. If the water stays too warm, bleached corals will die without their algae mutualists.

Carly is a scientist who wants to study coral bleaching so she can help protect corals and coral reefs. One day while out on the reef, Carly observed an interesting pattern. Corals on one part of a reef were bleaching while corals on another part of the reef stayed healthy. She wondered, why some corals and their algae can still work together when the water is warm, while others cannot?

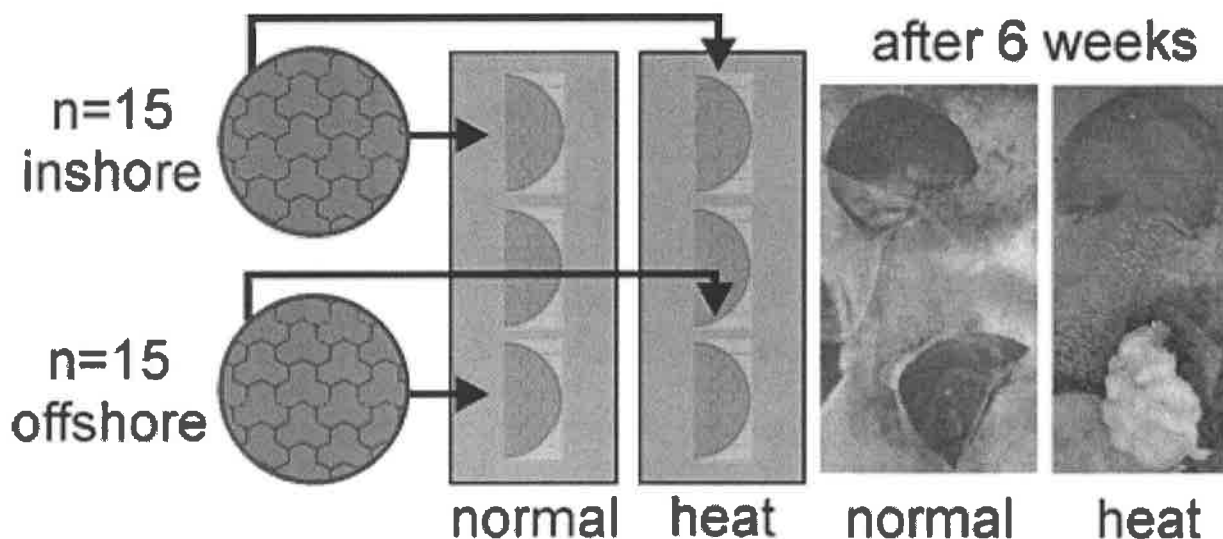


A Pacific coral reef with many corals



Carly observing a coral reef

Ocean water that is closer to the shore (**inshore**) gets warmer than water that is further away (**offshore**). Perhaps corals and algae from inshore reefs have adapted to warm water. Carly wondered whether inshore corals are better able to work with their algae in warm water because they have adapted to these temperatures. If so, inshore corals and algae should bleach less often than offshore corals and algae. Carly designed an experiment to test this. She collected 15 corals from inshore and 15 from offshore reefs in the Florida Keys. She brought them into an aquarium lab for research. She cut each coral in half and put half of each coral into tanks with normal water and the other half into tanks with heaters. The normal water temperature was 27°C, which is a temperature that both inshore and offshore corals experience during the year. The warm water tanks were at 31°C, which is a temperature that inshore corals experience, but offshore corals have never previously experienced. Because of climate change, offshore corals may experience this warmer temperature in the future. After six weeks, she recorded the number of corals that bleached in each tank.



Scientific Question: What is the effect of water temperature on corals from inshore and offshore reefs?

What is the hypothesis? Find the hypothesis in the Research Background and underline it. A hypothesis is a proposed explanation for an observation, which can then be tested with experimentation or other types of studies.

Check for Understanding: After reading the Research Background please answer the following questions in your own words.

1. Describe the tradeoff between open water and cover habitat for young bluegill.
2. Describe the two behavior types (bold and shy) of fish measured in this experiment.
3. Make a prediction about how a young bluegill's behavior may affect its habitat choice.
4. Explain why it was important for Melissa's measure of growth for the bold and shy fish to have a similar size (length and weight) at the beginning of the experiment.
5. Give an example of animal personality you have observed in a species you are familiar with.

Name _____

Scientific Data:

Use the data below to answer the scientific question:

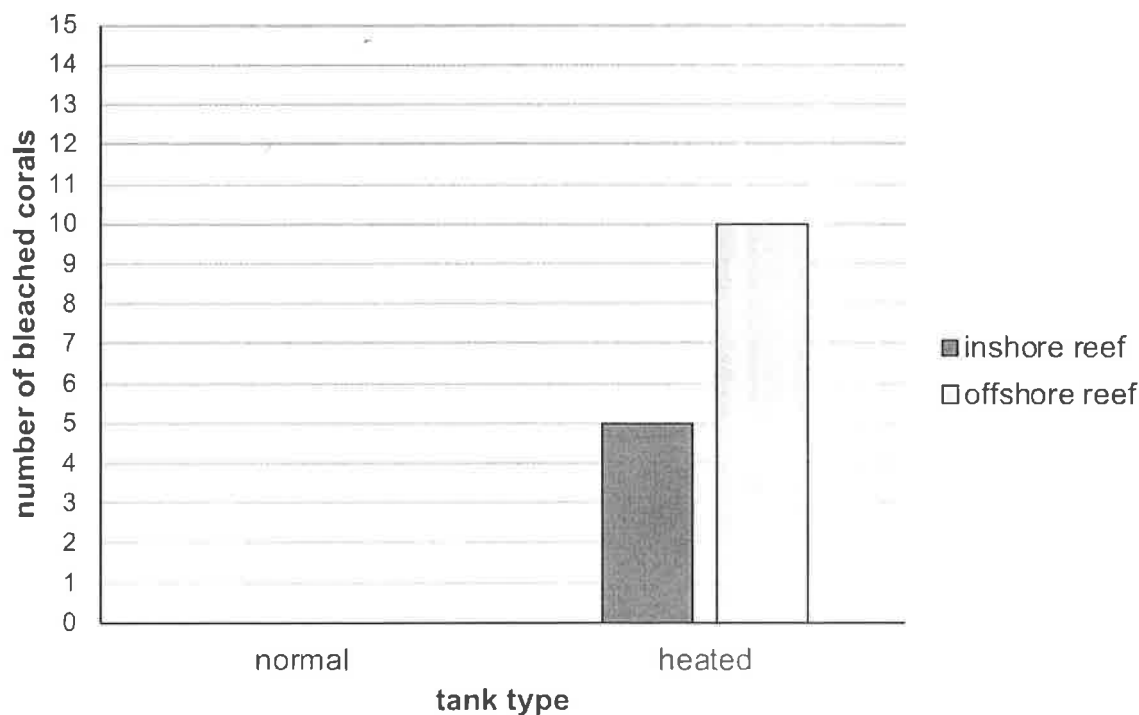
corals from	tank type	number of bleached corals
inshore reef	normal	0/15
offshore reef	normal	0/15
inshore reef	heated	5/15
offshore reef	heated	10/15

What data will you graph to answer the question?

Independent variable: _____

Dependent variable: _____

Below is a graph of the data: Identify any changes, trends, or differences you see in your graph. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



Name _____

Scientific Data:

Use the data below to answer the scientific question:

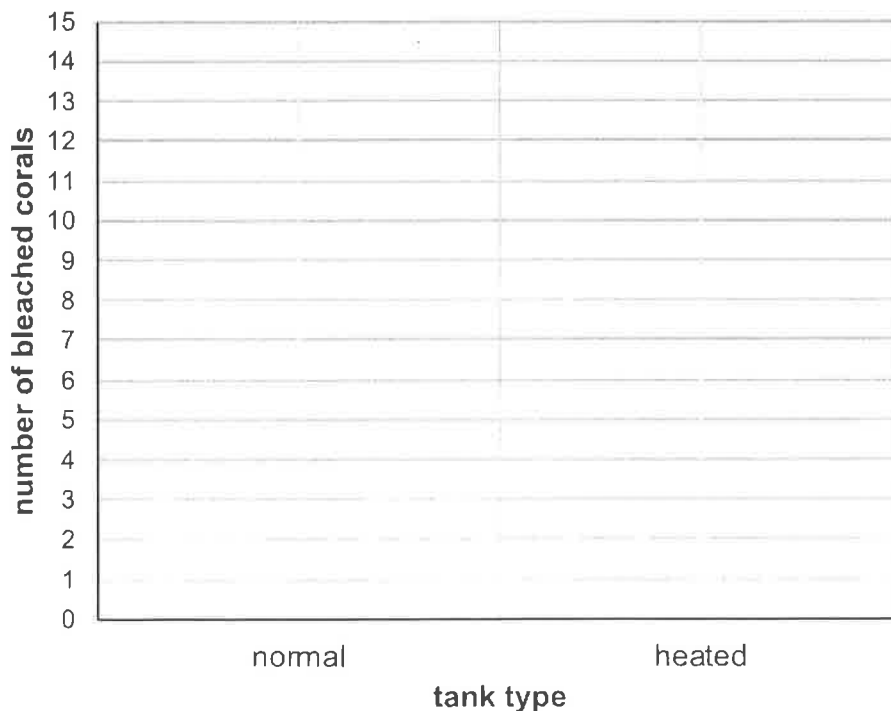
corals from	tank type	number of bleached corals
inshore reef	normal	0/15
offshore reef	normal	0/15
inshore reef	heated	5/15
offshore reef	heated	10/15

What data will you graph to answer the question?

Independent variable: _____

Dependent variable: _____

Draw your graph below: Identify any changes, trends, or differences you see in your graph. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



Name _____

Scientific Data:

Use the data below to answer the scientific question:

corals from	tank type	number of bleached corals
inshore reef	normal	0/15
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What data will you graph to answer the question?

Independent variable: _____

Dependent variable: _____

Draw your graph below: Identify any changes, trends, or differences you see in your graph. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



Name _____

Interpret the data:

Make a claim that answers the scientific question.

What evidence was used to write your claim? Reference specific parts of the table or graph.

Explain your reasoning and why the evidence supports your claim. Connect the data back to how warm water affects the mutualism between coral and algae.

Name _____

Did the data support Carly's hypothesis? Use evidence to explain why or why not. If you feel the data were inconclusive, explain why.

Your next steps as a scientist: Science is an ongoing process. What new question(s) should be investigated next to build on Carly's research? What future data should be collected to answer your question(s)?

Name: _____ Date: _____

Understanding Hypotheses

You already know that the scientific method provides an organized way to investigate a question. Once you have a question that you want to investigate and have done some research on it, the first step in the scientific method is to express that question in terms of a hypothesis. A hypothesis is an idea about how what you are investigating works. A hypothesis is often stated as a condition (if) and a result (then).

Example: If I add fertilizer to my plants, I will get more flowers.

A hypothesis is a prediction about what you think will happen *if* you try the condition. A good hypothesis must be *testable*. A hypothesis must be written carefully so that you can measure both the condition and the result. Is the example hypothesis testable?

A hypothesis is testable if you can create a *controlled* experiment that will give you more information. This hypothesis is testable because you can experiment with two groups of plants of the same species. One group would get a measured amount of fertilizer, like one tablespoon, on a regular schedule and the other group of plants wouldn't get any fertilizer. Then at the end of the experiment you can measure, or count, the number of flowers on the plants in each group.

An untestable hypothesis: If I eat more protein, my muscles will be stronger.

There are two reasons why this is not a well-defined hypothesis. If you tried to design an experiment from this hypothesis, there is no control group to compare to. Second, "get stronger" can't be measured. Think of some ways that you could measure "get stronger." Did you think of lifting heavier weights, running further, or doing more pull-ups? These are three different ways of measuring strength in a human.

Exercise: Write a testable hypothesis for the following statement.

Statement: Proper tire pressure improves gas mileage.

Hypothesis: If the tire pressure for a car is set at the manufacturer's recommended amount, the gas mileage of the car will increase.

How would you test this hypothesis?

Name: _____ Date: _____

Practice with Hypotheses

Write a testable hypothesis for these situations.

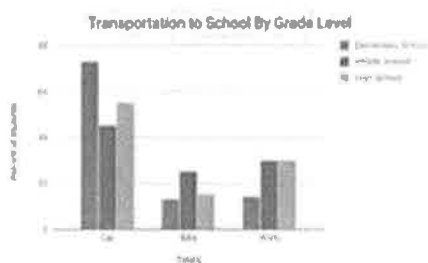
1. Mom and I were baking a cake for my brother's birthday. We didn't have any baking powder. The recipe said to add one teaspoon of baking powder to the cake batter. Since that's such a small amount we baked the cake anyway. We were very disappointed when the cake came out of the oven flat instead of fluffy. We think maybe we needed to add the baking powder.
2. You and your friends were studying lists of spelling and vocabulary lists. It seemed like everyone could easily remember the first word on the list and the fifteenth word on the list. It seemed very hard to remember the words in the middle of the list.
3. The Acme Cleansers Company wants to do some advertising for its new anti-bacterial kitchen cleaner. The advertising executives want to run some tests that show that their new product is better than the best-selling brand of kitchen cleaner.

RESOURCE: Graphing

SCIENCE AND ENGINEERING PRACTICES

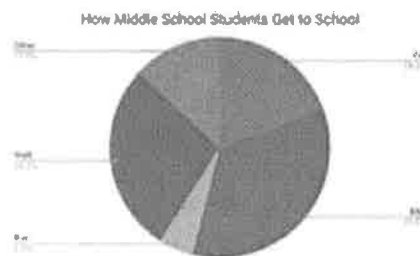
Analyzing & Interpreting Data

Bar Graph



- Best for: Comparing different groups
- Example: Comparing how students get to school in elementary, middle and high school

Pie Chart



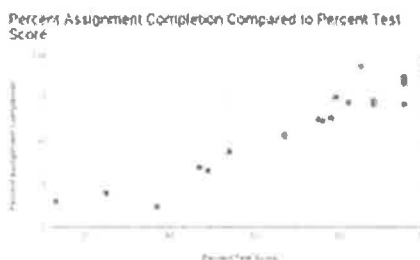
- Best for: Comparing parts of a whole
- Example: Showing the percentage of students that use each transportation type to get to school

Line Graph



- Best for: Showing change over time
- Example: Showing how the percent of students getting school lunch changes throughout the school year

Scatter Plot



- Best for: Showing correlation between variables, often used when looking at larger data sets
- Example: Comparing assignment completion to test score

Graphing Practice:

Students will practice choosing the correct graph type and graphing the data

SENTENCE STARTERS: CLAIM, EVIDENCE, REASONING

1. **CLAIM** - Directly answers the question

Sentence Starters

- I observed _____ when _____.
- I compared _____ and _____.
- I noticed _____, when _____.
- The effect of _____ on _____ is _____.

2. **EVIDENCE** - The scientific data that supports the claim.

- Data are observations or measurements OR results from an experiment.
- Specific Examples
- Use numbers and data table information

Sentence Starters

- In the data ...
- The evidence I use to support _____ is _____.
- I believe _____ (statement) because _____ (justification).
- I know that _____ is _____ because _____.
- Based on _____, I think _____.
- Based upon _____, my hypothesis is _____.

3. **REASONING** - Explains why the evidence supports the claim, providing a logical connection between the evidence and claim.

- Why is the claim valid?
- include general scientific principle
- background/ prior knowledge

Sentence Starters

- Based on the evidence, we must conclude... because....
- The most logical conclusion we can draw from this evidence is that.... because....
- These facts work together to build a case that... because...
- All of this proves that..... because...
- The reason I believe _____ is _____.

Plan For The Week Students Template

Plan for the week of: April 20th

At the end of the week you will know, understand, and/or be able to do the following:

Learn & interpret through oral history about specific experiences of their family members centered around an important historical event (i.e. 9/11, WWII, Pearl Harbor, the Kennedy Assassination, Y2K, the End of the Cold War, ect.).

Why does this learning matter?

You'll be learning about the personal experiences and thoughts of the someone in your family, while also learning history.

The plan for the week :

- **Monday:** Pick a second family member to interview in person or via video or phone chat. Use the "Ten Questions" page to develop the first ten questions that you ask the interviewee.
- **Tuesday: Interview** the family member in person, or via video or the phone, asking the first ten questions you created on the "Ten Questions" page. Be sure to write down notes on the answers given for each question. You don't have to stop at ten questions... there is space on the page(s) for more information. You don't have to write using complete sentences... these are just notes.
- **Wednesday & Thursday:** Using the questions and answers from the interview, write up a full one page summary of the interview. You can hand write the page, or you can choose to type it out. You do have to use complete sentences for this. You do not have to stop at one page, you can make it two pages if you prefer.
- **Friday:** Using the historical information gained in the interview, draw a picture related to the historical event. You can use stick figures and very basic shapes if you want, or you can be as detailed as Michaelangelo. You will not be graded on your art for the pic, just how it addresses the

content of your interview and write-up. Consider this a cover page for your report on the interview.

If you want to go **above and beyond** you can do some research on the topic you discuss in the interview, either while you are creating your questions, or after the interview, comparing what you find to the answers that were given.

If you struggle with writing the notes on what their answers are, simply write down keywords for what they answered... remember, the answers you write down do not need to be in complete sentences.

Who To Ask For Help and How To Reach Them

Mr. Davis, 6th Grade Social Studies Teacher

Email: bdavis@fernridge.k12.or.us

Student name: _____ Date: _____

INTERVIEW – TEN QUESTIONS WORKSHEET

Instructions: Create ten questions you will ask the person you will interview about a specific, crucial event in world history (like 9/11, WWII, Pearl Harbor, the Kennedy Assassination, Y2K, the End of the Cold War, ect.). Answers do not need to be in complete sentences.

Sample Questions:

- How old were you when the event occurred?
- Where were you living when the event occurred?
- How did you find out about the event?
- What did you think about what was going on?
- How did the event affect you and your family?
- Ect.

NOTE: There is space provided at the end of this worksheet for further notes after the tenth question is asked. Use that space to write down any further information you gain after the last question... (a.k.a. the last question doesn't have to be the end of the conversation).

Question #1: _____

Answer: _____

Question #2: _____

Answer: _____

Question #3: _____

Answer: _____

Question #4: _____

Answer: _____

Question #5: _____

Answer: _____

Question #6: _____

Answer: _____

Question #7: _____

Answer: _____

Question #8: _____

Answer: _____

