

Graphing

GRADE LEVEL: 6th grade

SCIENCE CONCEPT: To teach students the different types of graphs used to display data and how to make graphs from the data they gather.

RELATIONSHIP TO CALIFORNIA SCIENCE CONTENT STANDARDS:

7. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:

- c. Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.

LEARNING OBJECTIVE:

1. Students will construct a graph of their choice based on what they see when they look at the mealworms. Students are free to choose what to look for and graph and how to graph it.

EVALUATION IDEAS:

1. formative: I will observe the students while they work in groups and figure out how to construct a graph of the mealworms. I will ask questions while they are working about what they are doing and why.
2. summative: Students will turn in a worksheet on three different types of graphs: bar graph, histogram, and line graph. Students, working in groups, will turn in a graph of their choosing based on what they can observe with the mealworms. Students will present their graph to the class.

CONCEPTUAL BACKGROUND:

Using graphs helps to organize and share information gathered during scientific inquiry. There are different types of graphs used to display data including bar graphs, histograms and line graphs. Students can evaluate which graph will work best to display the data that they have collected.

LESSON IMPLEMENTATION PLAN:

ENGAGE – To get students excited about the lesson allow them to come and briefly look at the mealworms. Tell them that they will have an opportunity to work with the mealworms later. They can look at the mealworms and think of questions they might have about them. You could also read chapter 16 (pages 81-85) of “Food Rules! The Stuff You Munch, Its Crunch, Its Punch and Why You Sometimes Lose Your Lunch” This chapter focuses on insects as food. (page 83 talks specifically about mealworms used as food by the New York Entomological Society at their buggo banquet) Explain that we will not be eating mealworms today but we will use them to help complete the assignment.

EXPLORE –Review graphs used to organize data. Have students complete a worksheet on graphs. The worksheet will provide examples of a bar graph, histogram and a line graph. Divide students into groups of about 3-5 students. Allow students to look at the mealworms. Groups will work together to decide what information can they gather and put into a graph. Have the students display the information they gathered in a graph of their choice on the mealworm graph worksheet.

EXPLAIN – The groups will present their graph to the class. They will explain what information they gathered, which graph they used to display that information and why they chose that graph.

ELABORATE – Have the students brainstorm other data that scientists might graph with the mealworms over time. Ask the students to explain which graph they would use and why. Write the answers on the board.

EVALUATE –

- (a) summative: Students will turn in a worksheet with three different graphs. As a group, students will turn in a worksheet with the graph they chose for the mealworms.
- (b) formative: I will observe the students while they work in groups and figure out how to construct a graph of the mealworms. I will ask questions while they are working about what they are doing and why.

DIFFERENTIATION PLANS:

Behavioral for Student A:

I will give the student a task, such as teacher helper passing out and collecting worksheets to make sure the student stays engaged. I will check in with the student and make sure the student stays on task.

Cognitive for Student B

I will make sure to place student in a group that will help the student stay engaged. I will verbally check with student to make sure student understands instructions and is on task.

Cognitive for Student C

I will provide the student with step by step instruction to help make sure they understand the assignment and feel comfortable doing it. I will check in with them during the lesson to make sure they are on track and understand the lesson.

Affective for Student D

I will make sure the student is in a group they feel comfortable with and I will check on the student throughout the lesson.

Language Demands for Students E

For a student who is learning English, I will label the different materials used in the lesson.

Language Demands for Students F

For a student who is learning English, I will write key words on the board and have everyone repeat the words together. I will keep the words posted on a word wall.

Language Demands for Students G

For a student who is learning English, I will model all tasks before the students start the assignment.

LIST OF MATERIALS (PER GROUP):

- the book “Food Rules! The Stuff You Munch, Its Crunch, Its Punch and Why You Sometimes Lose Your Lunch” to read a section to the class
- mealworms
- pen or pencil
- scientific graphs worksheet (1 per student)
- mealworm graph worksheet (1 per group)

DIRECTIONS OR SPECIAL INSTRUCTIONS; SAFETY CONCERNS, ETC.

Students are not allowed to touch the mealworms and should only observe them by looking at them.