Graph Scavenger Hunt Station Rotation

Lesson 3 of "All That Data!" Unit

BACKGROUND

This lesson is designed in a station format and is the third activity in a unit entitled "All That Data!" You can, however, use this learning activity as a discreet lesson on graphs. That will require, however, that students be sufficiently prepared to attempt the station work with some degree of independence so you can instruct at STATION 6. You may need to provide appropriate experiences prior to this learning activity so that this is possible. Students will work collaboratively in groups of approximately 4 students, but will produce individual products.

The stations are ordered for particular purposes. For instance, work at STATION 4 must follow the work done at STATION 1. STATIONS 1, 3, and 5 require more "sit down" work and are alternated with STATION 2, 4, and 6, which allow more movement. However, you may adjust the order for your purposes. Directions and practice for each station should be provided before students are expected to work independently.

In addition, here are a couple of ideas for management:

1. One approach to management is to instruct students on how to conduct simple experiments initially. (This learning activity is called "Leap Frog Experiment" and is located at http://ww3.bay.k12.fl.us/boa/display.asp?lessonid=2069 .) Then have students move to STATION 2 to complete their activities. Continue this until a group of students is ready to move to STATION 1. Then teach that small group of students how to use the BEACON Lessons. Ask them to train the next tier of students on how to use the BEACON Learning Center site at http://ww3.bay.k12.fl.us/beacon/search.asp . Once that next group of students is trained, the first group of students may move to STATION 3. Then instruct them on how to conduct the scavenger hunt. Continue this pattern until each group has a chance to go to each station in order. Allow students to move to the next station when they have completed their work at a particular station, in order.
2. Another approach is to instruct all students regarding each of the stations (not in one sitting!). Allow practice time to ensure that students understand what is expected of them. Then have students rotate to each station over the course of a few periods or days. Try to keep the time at each station at approximately 20 minutes. However, students may require more than one time at each station to produce quality work.

If you are following the default sequence of the "All That Data!" unit,
STATIONS 1 and 2 should be the least teacher intensive and allow students time to investigate what has already been introduced
STATIONS 3 – 5 will require a mini-lesson on procedures as outlined for each station
STATION 6 is teacher-directed reflection and integrates technology

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STATION –SPECIFIC MATERIALS:

STATION 1: WHAT ARE GRAPHS?
-BEACON Learning Center lessons bookmarked on a computer with Internet access:
Kinds of Graphs (This is an introduction to graphs.)
The group of lessons correlated to MA.E.1.2.1 (The order can be student selected.)
Kids Have Pets (This requires students to create their own graph. It should be attempted after students have ample experiences with graphs.)
-Graph Scavenger Hunt Web follow-up activity (download from Associated File)

STATION 2: GRAPHS FOR RECORDING SIMPLE EXPERIMENTS
-A variety of coins for tossing
-Graph paper or paper with a large centimeter grid (at least one per student)
-Class graph (butcher paper, poster, chalkboard)
-Tools for constructing graphs, such as rulers
-List of criteria for a graph (See assessment.)

STATION 3: GRAPHS IN MEDIA
-Newspapers or magazines marked that display different kinds of graphs that are appropriate to your class
-Copies of Graph Scavenger Hunt Record Sheet (one per student using downloaded Associated File)

STATION 4: GRAPH MAKING
-Graph paper or paper with a large centimeter grid (at least one per student)
-Notebook paper

STATION 5: GRAPHS IN LITERATURE
-A variety of children's books (both informational and stories) that have graphs bookmarked (If your students have access to a library and media specialist, they could go to the library for this part of the scavenger hunt.)
-Copies of Graph Scavenger Hunt Record Sheet (This is the same Scavenger Hunt Record Sheet used at Station 3. There will need to copies available here also for management purposes.)

STATION 6: WHAT DO I KNOW ABOUT GRAPHS NOW?
-Notebook paper
-Printer loaded with paper
-Access to computer with word processing software
-Reflective journal

STATION-SPECIFIC PROCEDURES:

For management purposes, you could make a list of "kid" instructions and post at each station.

STATION 1: WHAT ARE GRAPHS?

1. Review the procedures for completing BEACON Lessons online and the following sequence of lessons that students should follow:

-"Kinds of Graphs" (This should be completed first. It is an introduction to all kinds of graphs.)

-"Kids Have Pets" (This should be completed last in the sequence. It directs students to create their own graph after collecting data in the classroom. This follow-up activity is also an assessment. It is explained in STATION 4 procedures.)

-"How It All Stacks Up," "Piece of Pie," "Play Ball," and "Vacation" (The order of these lessons can be student selected.)

2. Instruct students to complete the Graph Scavenger Hunt Web follow-up activity (included in this Associated File) as they finish the lessons. Students will need a place to store this activity sheet since students will not complete this sequence of lessons in one sitting.

STATION 2: GRAPHS FOR RECORDING SIMPLE EXPERIMENTS

1. Review the steps for conducting coin toss experiments (Procedures for this can be found in learning activity, "Heads-Up Probability" at http://ww3.bay.k12.fl.us/boa/display.asp?lessonid=1885) and spinner experiments (Procedures for this can be found in learning activity, "Leap Frog Experiment" at http://ww3.bay.k12.fl.us/boa/display.asp?lessonid=2069) as conducted in class. If you have conducted simple experiments with your class before, follow your own format.
2. Review the different kinds of graphs used to collect data from these experiments, i.e. class data graph, coin toss graph, etc.
3. Instruct students to conduct the experiment of their choice.
4. Instruct students to collect their data from the experiment and create their own graph to organize and record their results. They may use the previous graphs as models to assist them when constructing their graph.
5. Direct students' attention to the list of "Graph Criteria" to help them include all of the important information on their graph.

STATION 3: GRAPHS IN MEDIA and STATION 5: GRAPHS IN LITERATURE

1. Display media and literature available to students at the stations.
2. Introduce the scavenger hunt as a way to investigate how graphs work in the real world. (Make sure the media and literature are appropriate to your audience.)
3. Discuss the questions on the scavenger hunt. (Download from associated file.)
4. Model procedures by sharing an appropriate graph you have found at your home. Ask students how they would answer each question on the scavenger hunt based on your graph. You may want to demonstrate how to use the Graph Scavenger Hunt Record Sheet on an overhead projector.
5. Check for understanding by asking students what they will do at STATION 3 and 5.

STATION 4: GRAPH MAKING (Assessment)

1. Review the parts of a graph.
2. Instruct students to follow the procedures they learned about at STATION 1 to answer a question about pets, i.e. What kind of pets do the people in my class have? Which animal is the most popular pet? Who has the most pets?, etc.
3. Talk about how to go about generating, collecting, organizing, and displaying the necessary data in graph form to answer the question.
4. Review the "Graph Criteria."
6. Review the different kinds of graphs used to collect data from these experiments, i.e. class data graph, coin toss graph, etc.
7. Instruct students to conduct the experiment of their choice.
8. Instruct students to collect their data from the experiment and create their own graph to organize and record their results. They may use the previous graphs as models to assist them with constructing their graph.
9. Direct students' attention to the list of "Graph Criteria" to help them include all of the important information on their graph.

STATION 6: WHAT DO I KNOW ABOUT GRAPHS NOW? (Self-Assessment)

1. Guide students to locate graphs in software, such as a clip art file.
2. Allow each student to print a picture of a graph found in the clip art file.
3. As students print their graphs, call individuals to a small group to reflect on their work with the Graph Scavenger Hunt and graph construction completed at stations. Ask questions, such as what makes a graph a graph?, Which of the graphs help solve problems?, What kind of data does the graph display?, What does the data tell you?, etc.
4. Have students reflect upon their own graphs to determine if their graphs have met the "Graph Criteria."
5. Allow students to make adjustments to their work based upon their reflections.
6. Ask students whether or not the graph they downloaded from the software is indeed a graph based upon the criteria for a graph.
7. Ask students to discuss what should be included to make the clip art graph a real graph.
8. Have students make the clip art graph into a real graph based upon the graph criteria.
9. Discuss what makes a graph a graph. As students look back at the pre-test they took at the beginning of the unit, have students record reflections about what they have learned about graphs so far in a their Data Diary.

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NAME _____ Date _____

Graph Paper

Graph Criteria

Does your graph include...

- appropriate graph title
- labels for the units on the axes
- appropriate numbers for the scale
- accurately graphed data

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Name _____ Date _____

Graph Scavenger Hunt

Where are...

graphs in media?			
What's the problem?	What do the parts of the graph tell you? Title _____ Labels _____ Scale _____ Data _____	What kind of a graph is it? ☐ histogram ☐ bar graph ☐ circle graph ☐ line graph ☐ pictograph ☐ chart	Does the data solve the problem? ☐ yes ☐ no How?

Where are...

graphs in literature?			
What's the problem?	What do the parts of the graph tell you? Title _____ Labels _____ Scale _____ Data _____	What kind of a graph is it? ☐ histogram ☐ bar graph ☐ circle graph ☐ line graph ☐ pictograph ☐ chart	Does the data solve the problem? ☐ yes ☐ no How?

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Web Lesson Review Activity for …

"Kinds of Graphs," "How It All Stacks Up," "Piece of Pie," "Play Ball," and "Vacation"

1. Why do people use graphs?

2. What are the important parts of a graph?

3. If you could make a graph, what kind of data would it show?

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