

Picture Graphs and Bar Graphs

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Math Structures II

EMPACTS Project-Fall 2022

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- Using the 2nd grade Arkansas math standard, I developed a lesson plan including whole group instruction, partner work, and an independent check for understanding using manipulatives and technology. I made a [slideshow](#) that helped guide my lesson in google slides.
- My lesson took place in Mrs. Bailey's 2nd grade classroom at Garfield Elementary School in Garfield, Arkansas.
- Garfield Elementary School is part of Rogers Public School District and has held students continuously since 1888. It has a rich history and each student receives a unique experience at this historic school.



Arkansas Standard: AR.Math.Content.2.MD.D.10

- Draw a picture graph and a bar graph, with single-unit scale, to represent a data set with up to four categories
- Solve simple, put-together, take-apart, and compare problems using information presented in a bar graph

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Math Structures II /Professor Hammack

Pictograph and Bar Graph Lesson Plan

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- Draw a picture graph and a bar graph, with single-unit scale, to represent a data set with up to four categories
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Grade and Course: 2nd Math

Objectives: Students will compare and contrast pictographs and bar graphs. They will generate data with other students to build a data table that they will then use to construct a pictograph. Students will work with a partner to construct a bar graph given a data table as well as fill in missing parts within the graph. A check for understanding will consist of constructing a bar graph from a given data table and filling in missing parts independently.

Date: 11/20/2022

Materials: Google slide "Favorite Pets," bag of starburst for each student containing up to 4 colors/flavors making sure each of amount does not exceed amount provided on the graph (up to 7), paper copy of Colors of Starburst Bar Graph worksheet, colored pencils or crayons (pink, yellow, orange, and red), pencil, Chromebooks or tablets, and assigned Seesaw lesson "Candy for the carnival!"

Safety: Starbursts can pose a choking hazard to certain age groups and/or abilities. Take caution that each student can eat the candy correctly and the activity is approved by the school administration before presenting to your students. Student allergies and food sensitivities should also be considered. This activity could be completed using colored counters instead of candy if there is a concern or objection.

Lesson Delivery

1. Begin the lesson as a whole group instruction with the google slide "Favorite Pets." Start by generating ideas about pictographs and add them to the thought bubble as students give relevant aspects.
2. Call students one at a time to contribute to the data table by choosing their favorite pet from the options and dragging the corresponding picture to the correct column on the data table. Complete the table by writing the totals at the bottom of the columns once all the students have participated. Transfer these totals to the data table on the next slide.
3. Use student participation to build the pictograph based on the totals in the data table reflecting the favorite pets of the class. Ask the students questions after building the pictograph that utilizes analyzing the data.
4. Move to the slide containing the thought bubble titled "What is a bar graph?" Generate relevant attributes of a bar graph and add them to the slide encouraging student responses. Encourage students to compare and contrast these characteristics to those of a pictograph.
5. Pair the students in groups or partners and introduce the activity "Colors of starburst bar graph." Explain that the candy that will be given is needed to complete the activity and not to consume the candy at this time. You may choose to let the students eat the candy after this activity or to take home. Use the slide that lists the materials needed for the activity to ensure the students are ready. Give out the worksheet and circle the room as the students work to complete the assignment.
6. As students complete the assignment and you have checked their work, guide them to the posted Seesaw lesson that they will complete independently as a check of understanding.

Works Cited

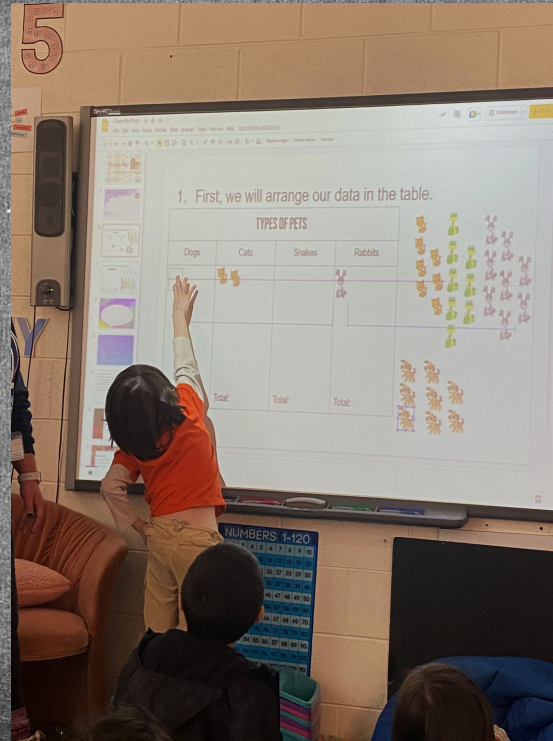
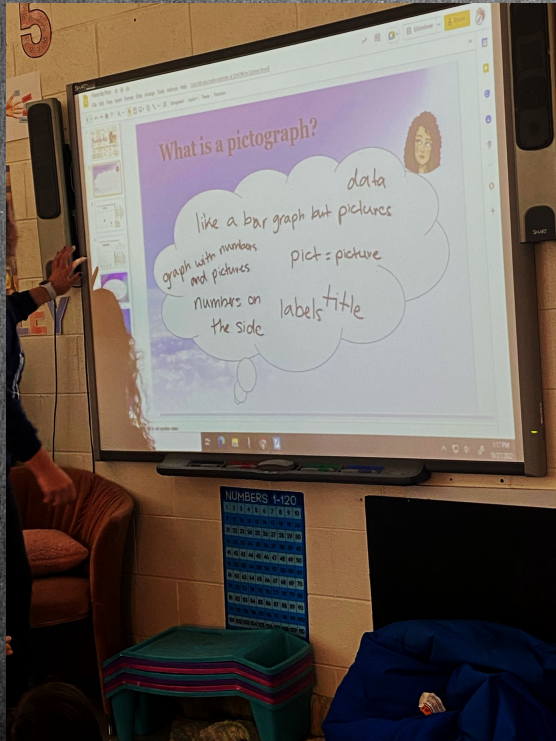
"Ice Cream Pictographs." Cpalms, Florida State University,

<https://www.cpalms.org/PreviewResourceStudentTutorial/Preview/191750>.

"Favorite Ice Cream Flavor." Illustrative Mathematics,

<http://tasks.illustrativemathematics.org/content-standards/2/MD/D/10/tasks/506>.

Pictographs: We first generated ideas about pictographs and compared them to bar graphs. We added our thoughts to the thought bubble. We then constructed a data table by polling the class on their favorite pet. Finally, we used the data table to build a pictograph. I asked the students questions pertaining to the data in the graph to check for understanding.



Bar graphs: To begin thinking about bar graphs, we started talking about attributes of bar graphs and added them to a new thought bubble labeled “bar graphs.” I then introduced the worksheet “Color of starbursts bar graph.” We went over the expectations with the candy, the materials needed, and how to ask for help.

Name _____

Color of starburst bar graph

- Sort your starburst by color.
- Enter your data in the table below:

Pink	Yellow	Orange	Red

- Label the missing parts in the grey boxes on the graph.
- Make bars using the data in the table.
- Answer the questions using your bar graph.

7			
4			
2			
1			
	Pink	Orange	

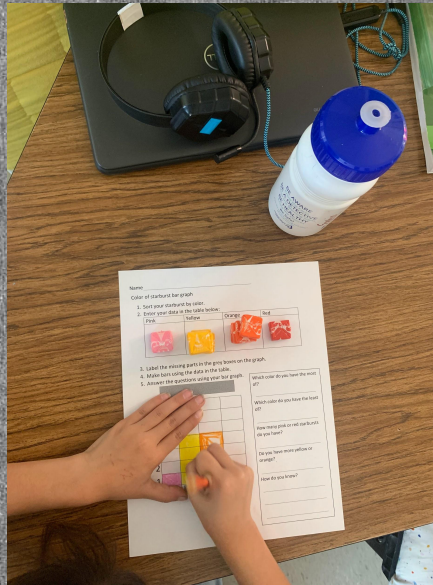
Which color do you have the most of?

Which color do you have the least of?

How many pink or red starbursts do you have?

Do you have more yellow or orange?

How do you know?



Check for understanding: The student's final task was to complete a lesson on Seesaw independently. Students were provided with a data table and asked to construct a bar graph based on the data. They also had missing parts of the graph (title and missing frequency labels) to complete. Seesaw is a great platform for digital assignments at the elementary level. Differentiation can be used with this delivery method as students can leave verbal replies, draw pictures, or type answers. I also asked the students to leave a message about their favorite part of the lesson.

CANDY FOR THE CARNIVAL BAR GRAPH

Listen

Listen

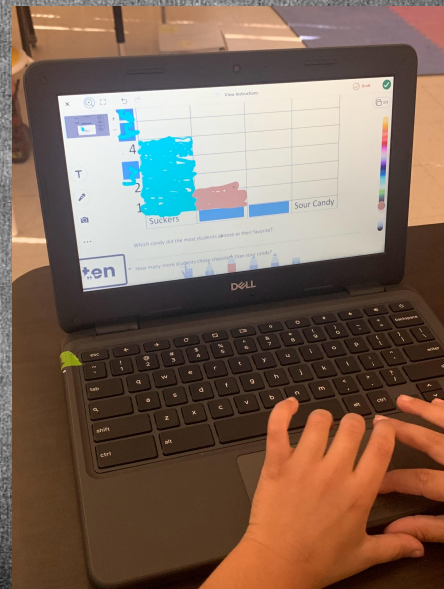
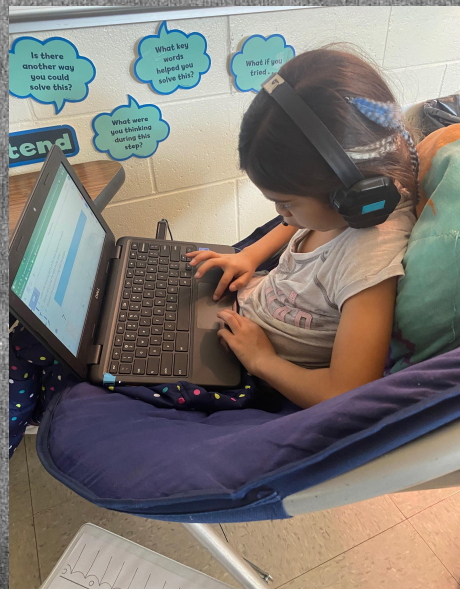
Candy	Students	Teachers	Parents	Sour Candy
7	4	2	1	1
4	2	1	1	1
2	1	1	1	1
1	1	1	1	1

Listen

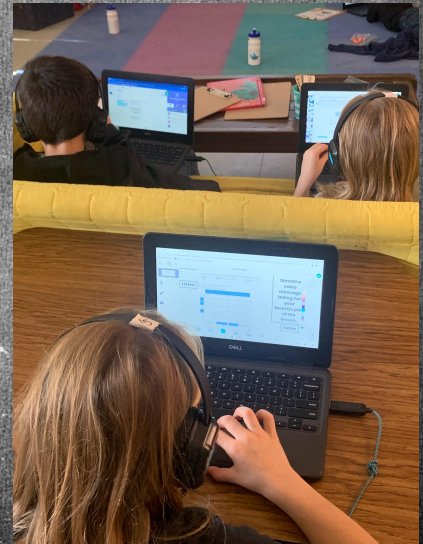
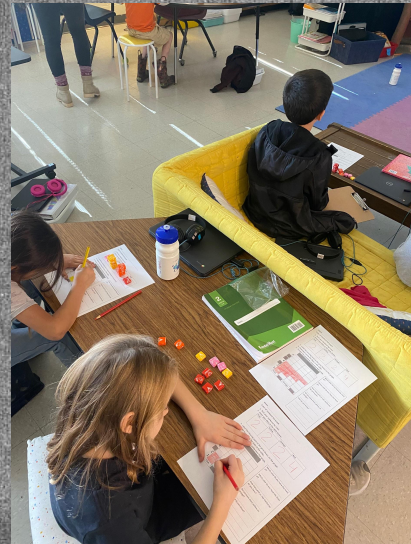
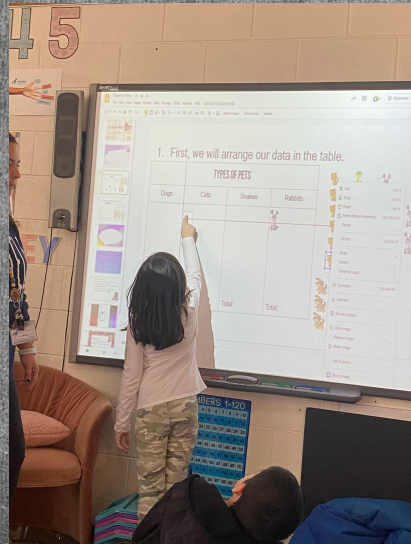
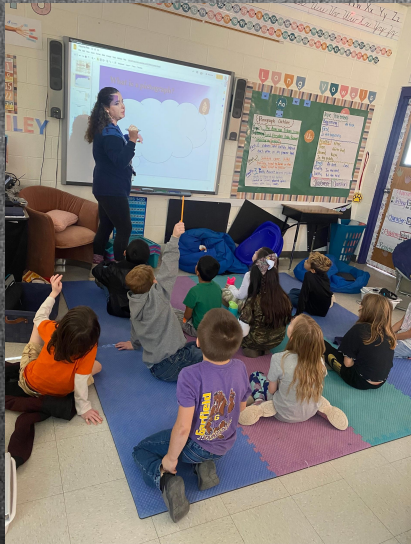
Bonus!! Leave Mrs. Simrell a voice message telling her your favorite part of the lesson.

Listen

[View Original](#)



Overall experience teaching this lesson: I was pleased with the outcome and student participation in this lesson. The students were engaged throughout and completed each task seamlessly. They grasped each concept within the objectives of the lesson and were able to answer questions that I presented accurately. I did not anticipate the time that it took to execute this lesson. Mrs. Bailey allowed her 1 hour math block for my lesson and it took the entirety of it to complete all tasks. Some students were not finished with the independent check for understanding at the end of the hour.



Sources used:

“Ice Cream Pictographs.” *Cpalms*, Florida State University,
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“Favorite Ice Cream Flavor.” *Illustrative Mathematics*,
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Special thanks to:

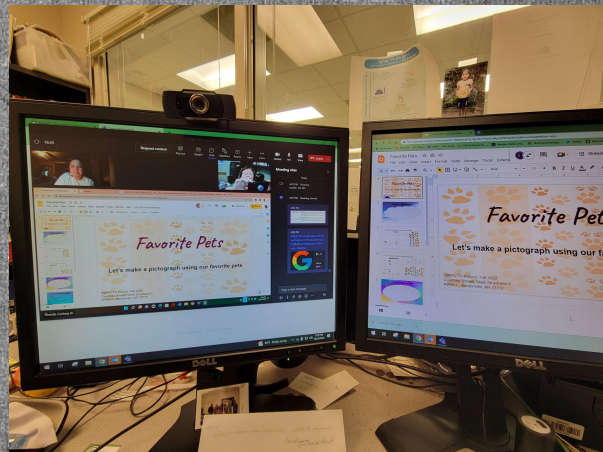
Garfield Elementary, Garfield, AR

Principal, Stephen Bowman

K-12 Mentor, Stacy Bailey

Professor Dianne Phillips, NWACC

Professor William Hammack, NWACC



Lesson collaboration with Prof. Phillips