BLACKSTONE VALLEY PREP MAYORAL ACADEMY



Discovering Data: Collecting, Recording, and Interpreting Data in Pre K-2

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Today's Agenda

- Introductions
- Do Now
- Objectives
- Standards
- Data Unit
 - Vocabulary
 - Data Collection
 - Data Representation
 - Data Interpretation
- Estimation
- Daily Routines





Do Now

Turn and Talk:

- How have you taught data in the past?
- What parts of your unit were successful?
- Where would you like to improve?

Let's share out!

What did your partner say?





Objectives

Teachers will ...

Gain an understanding of how to teach students about data and probability in an early childhood (Pre K- 2nd) classroom.

Learn how to teach data and probability as part of regular classroom routines.





Common Core State Standards

<u>Kindergarten</u>

M&D 2: Directly compare two objects with a measurable attribute in common ...

M&D 3: Classify objects and count the number of objects in a category.

<u>First Grade</u>

M&D 1: Organize, represent and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than another.

Second Grade

M&D 10: Draw a picture graph and bar graph to represent a data set with up to 4 categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.





Student Friendly Math Vocabulary

Defining key vocabulary using language the students understand is a crucial step in their success for this unit. <u>Turn and Talk: How would you define these words using</u> "student friendly" language?

- <u>Data</u>-
- <u>Survey</u>-
- <u>Tally</u>-
- <u>Table</u>-
- <u>Graph</u>-
- <u>Compare</u>-
- Interpret-

Let's share!





Student Friendly Math Vocabulary

- <u>Data</u>- Information we gather to answer a question or solve a problem
- <u>Survey</u>-asking the same question to a group of people
- <u>Tally</u>- a mark that means one
- <u>Table</u> a tool used to collect and sort data
- <u>Graph</u>- a tool used to show and compare data
- <u>Compare</u>- looking at how things are alike or different
- <u>Interpret</u> thinking about what a graph shows us to help answer our question or solve our problem

*Refer to vocabulary poster for visuals to support vocabulary comprehensi



Math Vocabulary

Data- Information we gather to answer a question or solve a problem

Survey- Asking the same question to a group of people

Tally- A mark that means one



Table- A tool used to collect and sort data

Graph- A tool used to show and compare data

Compare- Looking at how things are alike or different

Interpret- Thinking about what a graph shows us to help answer our question or solve our problem

Estimation- Making a pretty good guess based on the information that you have









Refer to Page 13 in your packet







Data and Collection

Students will understand...

1. What is data?



2. Why do we collect data?

3. How do we collect data?

4. What tools can we use to collect data?





2. Why do we collect data?

We collect data to:

answer a question solve a problem





3. How do we collect data?

Collecting data in an Early Childhood Setting



Surveying a group of people (pg. 2) Asking a class of students what color eyes they have.



Examining pictures (pg. 3) Examining a picture of animals at the zoo to see how many of each animal there are



Examining objects

Counting out a set of objects such as colored blocks to see how many of each color there are



Analyzing math stories

Focusing on the question who are the main characters?





How do we think of a (survey) question?

Students can generate a question based on:

What they are interested in

Do you like soccer or basketball more?

What they want to know

Do you have brown eyes, green eyes, or blue eyes?

• Their knowledge of others they will survey What is your favorite subject? P.E., math, or science?





How do we make a survey question?

Pick a question with a few possible answers or limited options for answers
 What is your eye color?
 What animal do you like best? dog, rabbit, or lion?

Make sure that the answer choices are related What color hair do you have? (brown, blond, black or red?)

vs.

What do you like best? (elephants, soccer, or summer)





4. What tools do we use to collect data?

Tables can be used as a tool to collect data. What is your favorite pet?

Pet Tally Marks Numb			
a series	-## -##	10	
]]]]	4	Refer to page 1 in your packet
	-### 1	6	



How do we represent data?

Bar Graphs

5		
4		
3		
2		
1		





Pie Graphs







Pie Graphs

Turn and Talk

How can we adapt pie graph lessons for pre-k and kindergarten students?

Lets share!





Please see page 10









Picture Graphs Using objects to collect data.



Please refer to pg. 7





How do we Interpret data?

Turn and Talk:



- What are some basic questions you could ask students about the data represented on this graph? (pre-k and kindergarten questions)
- What are some more challenging questions you could ask students about the data represented on this graph? (first an second grade questions)





How do we Interpret data?

Read the data

- How many turtles are in the picture? How do you know?
- Make comparisons with the data Are there more fish or turtles? How do you know?
- **Know? Use math to understand the data** *How many more fish are there than turtles?* **Apply the data** *If I want to get one of each animal at the pet*

store, which should I get first?





How do we Interpret data?

Name		Interpreting the Data:		
Survey Question: What is your favorite pet? Data Table: How many students like dogs the best? G_{ac}	NameDate			
Survey Question: What is your favorite pet? 6 4 2 Data Table: H H 0 0 0 Dog $Cerbil Dog Dogg Dogg $		★ How many students like dogs the best?		
Data Table: \square	Survey Question: What is your favorite pet?	6 4 2		
\overrightarrow{Dog} \overrightarrow{bog} \overrightarrow{Dog} \overrightarrow{bog} \overrightarrow{Carbil} \overrightarrow{bog} \overrightarrow{Carbil} \overrightarrow{bog} \overrightarrow{Cat} \overrightarrow{carbil}	Data Table:	o <u>o</u> o		
Dog 5 2 3 Gerbil 5 2 3 Cat 5 2 3 Cat 3 1 2 6 3 1 2 4 $ 4$ $ 1$ $ -$ <td< th=""><th></th><th>+ Howmany students like cats the best?</th></td<>		+ Howmany students like cats the best?		
3 3 6 3 3 1 2 3 4 3 3 1 2 3 1 1 1 1	Dog	A How many students like cats the best?		
\overline{Gerbil} \overline{Gerbil} \overline{Cat} \overline{Cat} $\overline{Graph:}$	A	5 2 3		
Image: Cat Image: Cat <th>Gerbil</th> <th>0 0 0</th>	Gerbil	0 0 0		
Cat 3 1 2 Graph: 0 0 0 6 0 0 0 5 0 0 0 4 0 0 0 2 0 0 0 1 0 0 0		★ How many more students like cats more than gerbils?		
Graph: 0 0 0 6 1 1 1 1 1 1 1 1 1 1 1 1	Cat	3 1 2		
Graph: 6				
6	Graph:			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6	★ How can this data help us?		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5	·		
	4			
<u>1</u>	2			
	1			
Dog Gerbil Cat	Dog Gerbil Cat			



How do we teach Estimation?

Level 1:

<u>Same</u> size *clear* container, <u>Same</u> sized objects (0-20)





Level 2:

<u>Same</u> size *clear* container, <u>Different</u> sized objects (0-20)





Level 3:Different size clear containers,
Same sized objects (0-50)

Level 4:Different size clear containers,
Different sized objects (0-50)

Level 5:

<u>Different</u> size *clear* containers, <u>**Different**</u> sized objects (0-100)











How Do We Incorporate Data and Graphing into Daily Routines?

Question of the Day

Ask a choice question. Tally each student answer. Interpret the data. **Competitions**

Awarding tallies for each point earned.

- Boys vs. Girls
- 📩 Teacher vs. Students
- \star Table competitions

Graphing Everything

Use a variety of graphs and interpret the data each time you add to them.

- 📩 Lost Tooth Graph
- ★ Daily Weather Graph
- ★ Books Read Graph

Graphing Sight Words					
1 2		3	4		
1	2	3	4		

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	(5			
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ιL		25	Coin Gr	osh	
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	9				
	8				
	7				
	6				
	5				
	4				
	3				
	2				
	1				
			5	10	(25)





Resources

1. <u>The Great Graph Contest</u> by Loreen Leedy



2. <u>Great Estimation</u> by Bruce Goldstone



3. <u>The Best Vacation Ever: Collecting Data</u> by Stuart S. Murphy

4. <u>Year Round: Charts and Graphs</u> by Teacher Created Resources







3,2,1... and done!

3

What are three things you learned?

2

What are two things you will use?

<u>1</u>

What is one question you still have on this unit?

Please take the rest of the time to check out our samples around the room. Thank you!

