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Mathematics: The Language of STEM
Stuffed Animal Zoo

CONTENT AND TASK DECISIONS

Grade Level(s): Second Grade

Description of the Task:

Students will decide what tools to use in order to measure an animal for a correct size cage for the zoo.

Indiana Mathematics Content Standards:

2.M.2 Estimate and measure the length of an object by selecting and using appropriate tools, such as rulers, yardsticks, meter sticks, and measuring tapes to the nearest inch, foot, yard, centimeter and meter.

Indiana Mathematics Process Standards:

PS.5: Use appropriate tools strategically

Mathematics Content Goals:

Students will select an appropriate tool to measure to the nearest inch, foot, yard, centimeter, and meter.

Language Objectives:

Students will verbalize the process he/she took to decide what tool is appropriate to measure an object.

Materials:

Mimio

Measuring Tools: ruler, yardstick, tape measure, and meter stick or meter wheel

Yarn

Stuffed Animals (small and medium sizes that represent animals seen in a zoo)

5 Posters of large zoo animals (project on board and trace on white paper, about 4-5 feet wide or tall)

THE LESSON

Before: (Day 1)

- Student Actions: Students will view the mimio and interact to activities on the board in order to explore the zoo, cages, and measuring tools.
- Teacher Actions: Teacher will lead the mimio interactions and inquiry question (How do we know an animal can fit in a cage or enclosure?)
 - First Screen-pictures of zoo animals, the logo for the Fort Wayne Zoo since our class will be visiting in May with the inquiry question at the top;
 - Great time to discuss what is a zoo and what we see at a zoo since some of the students have not been to a zoo; discuss that animals have to be shipped in a cage to get to the zoo since these animals aren't found in our neighborhoods.
 - Used questions to direct students inquiry that they will need something to measure the animals before sharing with the zoo about sizes for cages or enclosures
 - Second Screen
 - List task students have been given by the zoo
 - What questions do we need to ask in order to do our task
 - List 1-4 with blank spots for the questions

- Students turn and talk with carpet buddy and come up with one or two questions to share with the class
- Have students share questions they decided would be important to answer when working on this problem
- Third Screen
 - Same as screen two but questions filled in with box on top of it and as they share pull off a box
 - Each question under the box is what will drive the next day lessons
 - Most students had questions that related to the three that I had listed as important
 - 1. What do we mean by measurement?
 - 2. What tools do we need to measure the animals?
 - 3. Will one way work for every animal?
- Fourth Screen
 - Definition of measurement at the top and examples of measuring tools and units used to measure. Open for inquiry questions and discussion about other items that get measured daily.
- Fifth Screen
 - Tools and pictures of animals: Students drag animal to the tool they think would be best to measure that animal. I had a picture of a boy and elephant about the same size and it opened discussion for how a picture size is different from a real life animal.
 - Students came up and dragged one animal to a tool then handed the pen to another student to drag the next one with the option of changing tools. Students had to explain why they chose that tool for that animal.

During: (Day 2)

- Student Actions: Students will discuss in groups and share reasoning for answer to proposed question. Students will receive a bag/box with stuffed animals, poster, and measuring tools. Students will fill in a worksheet circling the tool used to estimate a measurement of an animal and write an explanation as to why they chose that tool. Students are given the choice of one person being a scribe for the group as long as each person participates or each one scribe for a specific animal (see worksheet attachment)
- Teacher Actions: Guide discussion by using questions to encourage critical thinking and reasoning.
- Lesson:
 - Teacher will start the lesson by discussing the terms inch, foot, centimeter, and yard, and meter including the abbreviation. This is shown on a mimeo screen with a section that shows the abbreviation so students can drag the word to the abbreviation.
 - Tools will be displayed for students to observe which tool uses which unit. Students are guided in a discussion about estimating in order to decide which tool works best for an item. Two objects are brought to the front of the class, one being large and one being small. Students are given a yard stick and ruler in each table group and are asked to discuss which tool would be best to measure which item and why. Students discuss in group and then shares with class.
 - Students work in groups with tools, stuffed animals, poster of larger animal, in order to fill in worksheet.

Day 3

- Lesson:
 - The definitions of length, width, and measure are on the screen but in the wrong order. Students discuss with carpet buddies the answers and then share with the class.
 - Students take out items used yesterday and finish deciding which tool is best for which animal and finish worksheet.
 - Students decide who in their group will share about each animal and their decision about the tool to use for measuring.

After: (conclusion of Day 3)

- Student Actions-Students present in front of the class their findings. Other students can ask questions.
- Teacher Actions-Ask questions so that students adequately prove their answer. During the past two days each group has been met with and directed so this should be minimal.
- Students compliment each other by clapping after each presentation.

ASSESSMENT

Post Test is given at the end of Day 3.

Observe: Students enjoyed the inquiry question and loved that it connected to the zoo which we will visit in May. Having students work in groups was great and assigning those groups enabled students to utilize those strengths for the whole group. Having different animals in each group helped keep the presentations interesting. I think that I would add an extension at the end and discuss some other units of measurement as a way to take this a step further before starting the next unit which works on students learning how to measure in specific units.

Ask: Could students be assigned separate animals within the group to study and report on as a few groups needed help dividing the work? This could help with deciding who presents as that is already decided so that would take less time.