Title: CARRYING CAPACITY

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Grade Level: K-3

Concepts:
3. Capacity
7. Land Use
11. Individual Acts

Disciplines:
1. Physical Education
2. Mathematics

Objective:

Through the activity steps outlined, children will conclude that a restricted space will accommodate a given number of people relating this to Planet Earth and population limits.

Rationale:

We can use the outdoor schoolyard in a fun game situation to learn simple mathematics while developing at the same time the environmental concept of carrying capacity that allows people to move and act freely in a prescribed situation. The important thing is to develop the relationship of what happens on Planet Earth when people are overcrowded. Example: If Planet Earth were as overcrowded as the square, would there be space for people to enjoy themselves or to grow food, if that's all the space there was?

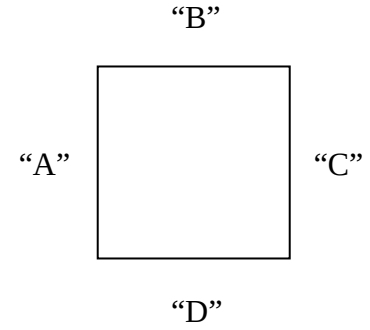
Materials Needed:

Some string, approximately 100 feet, and a measuring tool -- yardstick or meter, should be available, as well as something to write on and with. Depending on the size of the class, the size of the square may have to vary, modify the number of paces stepped off accordingly.

Directions/Activity:

1. Prepare a slip of paper with the name of each child in your class, place in a bag or box from which the names will be drawn at Step 5.
2. In the schoolyard, select the tallest child from your class and have the child take ten (10) steps in each direction, making a square.

Have a child stand at each corner and hold a string to make the sides.



3. Measure each side of the square, along the string, on the ground. Use a yard or a meter stick.

A. How long is side "A"?_____

B. How long is side "B"?_____

C. How long is side "C"?_____

D. How long is side "D"?_____

What do you need to make a square?_____

_____

Is each side as long as the other ones?_____

_____

4. Leave the string on the ground, forming the square. All the children now step into the square. Does the square hold all the children in the class?

How many children are in the square?_____

5. From a paper bag, that has each child's name on a slip of paper, draw out a child's name asking that child to make at least three (3) hops without bumping another child, while staying within the square. Each hop must be at least two (2) feet long in a different direction and the other children may not move, once stationed in the square. If the child called bumps into another child, the hopping child must leave the square.

6. The first child leaving the square may act as the counter. Have that child tally a mark for each successive child who has to leave the square because of hopping into another child.

Mark the tally marks here, including that of the first child:

_____

7. The second child having to leave the square may now act as the drawer of names from the paper baa. This continues until one child can hop three hops, each in a different direction, without bumping into another child. 14hen this happened:

How many children had to leave the square?_____

How many children were left standing in the square?_____

8. Have all the children remaining within the square hippety hop -as before, all at the same time. If they bump into another child, ask them to leave the square also.

How many more had to leave the square?_____

9. How many hippety hoppers could hop happily in the square?_____

10. If Planet Earth were the size of this square, what would this mean to the children? Discuss.

11. If the children would plan carefully the direction of their hops, how many more children could hippety hop without bumping into each other? How does this relate to people living on Planet Earth?