Pedometer Play

Summary

Students will use pedometers to record and graph various activities.

Main Core Tie

Mathematics Grade 2

Strand: OPERATIONS AND ALGEBRAIC THINKING (2.OA)

Materials

Three different colored pedometers.

- *Aliens at Recess*
  , by Teresa Bateman; Cricket Magazine; May 93. Vol. 20 Issue 9 p. 32.

Chart or board space to record steps from each pedometer.

Sentence strips

- *Graph of How Many Steps*
  for each student
- *How Many Steps*
  Overhead

Additional Resources

Books

- *The Recess Queen*
  , by Alexis O'Neill; ISBN 0439206375
- *King of the Playground*
  , by Phyllis Reynolds Naylor; ISBN 0689718020
- *Movement-Based Learning*
  , by Rhonda L. Clements & Sharon L. Schneider; ISBN 0-88314-916-8

Articles

- *Aliens at Recess*
  , by Teresa Bateman; *Cricket Magazine*; May 93. Vol. 20 Issue 9 p. 32.

Organizations

- America Alliance for Health, Physical Education, Recreation and Dance
  , P.O. |Box 385, Oxon Hill, MD 20750-0385, 1-800-321-0789,
- National Association for Sport and Physical Education
  , 1900 Association Drive, Reston, VA 20191-1599, 1-703-476-3410,

Background for Teachers

The teacher needs to understand how to set the stride length for each pedometer (included in the pedometer instructions.) There are different functions or modes of a pedometer. Some measure steps, calories burned, or miles/kilometers walked. For these activities, we will only use the step counter.

A pedometer is a tool used to count or measure your steps while moving. For the most accurate readings, the pedometer should be clipped to your belt, or waist band. Place the pedometer as close as you can to the crease line of your pants. The pedometer needs to be level with the ground. Students who are wearing an outfit without a belt or waistband could clip the pedometer to a fanny pack or an easy to use belt. Battery of a pedometer lasts about one year.

Intended Learning Outcomes

4. Develop physical skills and personal hygiene.

Instructional Procedures

Invitation to Learn

Ask the students if they know what an Alien is. Let them comment. Then tell them you have a story to share called *Aliens at Recess*. Read the story then ask, "What did the aliens want?" They just wanted to play tag. What are some other things you can do at recess? Begin generating a list of "Things to Do at Recess." (e.g. jump rope, basketball, tag, tetherball, Four-Square, soccer, monkey bars, catch, hopscotch.)

Instructional Procedures

- Show the students a pedometer and explain its purpose.
- Take a look at your list of "Things to Do at Recess" and discuss the main movement in each activity (e.g. jumping, running, walking, throwing, skipping, jogging, galloping).
- Record each movement that the class generates on a sentence strip.
- As a whole class, predict and rank each movement for which activity would have the most active (highest-pedometer reading) to the least active (lowest-pedometer reading).
- Have students record the movements on their *How Many Steps* Graph and predict how many steps each movement will have after a 30 second timing.
- Divide the class into three groups and give a pedometer to one child from each group.
- Assign a different movement to each group to perform as you time all the students for 30 seconds.
- After each timing, check the pedometers and record the actual number of steps for that activity.
- Repeat the timings until all of your movements are recorded with a step count.
- Check your predictions with your actual results.
- Select three students to take the pedometer to recess and keep track of how many steps they take during one recess period.
- As they return from recess, have them record the number from their pedometer on the chart/board.
- These three numbers will be used in a variety of ways to teach or reinforce math skills.

Place Value

- Use the numbers to work with place value. How many tens? How many ones? What number is in the 100s place?
- What is the value of a given digit? (e.g., 3 in 316 means 300, or in the number 267 the 6 stands for 60.)
- Write each number in expanded form (e.g., 178 is 1 hundred, 7 tens, 8 ones or 100+70+8).
- Write the number as a word.
- Build this number using base ten models with cubes, rods, and flats.
- Practice reading the larger numbers.

Whole Number Relationships

- What number would we have if Jordan took 100 more steps? What would our new number be if Carlos took 10 fewer steps? Build the number that shows three more steps than Shelly took.
- Take two of our numbers and write a number sentence using "greater than," "less than," or "equal to."
- Sequence these three numbers in order from least to greatest or from greatest to least.
- Read the number that is third on our chart. Who can read the first number listed? Find the number that is second on our chart.
- Which other number shown is closest to Jessica's number?

Addition and Subtraction

Add two numbers together. Now add the last number.
Make an addition story problem with today's numbers.
Come up with a story problem using subtraction.
How many more steps did Ben take than Alyssa?
How many fewer steps did Mark take than Kimberly?
Keep a running total for an entire week of recesses.
If I were to create a subtraction problem, which number up here would I not be able to use to start my problem? Why?
If I start with the largest number, what two subtraction equations can I create?

Mathematical Symbols

Using our numbers, write an equation using the sign.
Demonstrate how changing the order of the addends does not change the sum.
Write an equation from the numbers, then write it again substituting a symbol (e.g.,) to represent one of the values in the equation. What is the value for the symbol?

Measurement

If every step were worth 1¢, what is the value of today's number?
Austin entered a race where he got paid 5¢ for each step he took. How much money did he earn if he walked 17 steps in 10 seconds?
If Karen took 134 steps during a 15 minute recess, predict how many steps she might take during a half hour recess.
Draw the shape of different play areas on your playground. (e.g. basketball court, 4-square area, soccer field, jungle gym area) Record the number of steps for each side. Figure out the perimeter of the shape.
The school playground is shaped like a square. If David walked around the perimeter of the playground and took 21 steps on one side, what is the perimeter, in steps, around the entire playground?
In an area shaped like an equilateral triangle, Leslie took a total of 30 steps to walk around the perimeter. How many steps did she take on each side of the triangle?

Data

Graph the number of steps from recess today.
Survey the class to see what their favorite recess activity is
Keep track of individual pedometer readings for a week then compare the girl's pedometer readings to the boy's. Make a bar graph showing the comparison.
Keep track of the pedometer readings for each different colored pedometer for the week and graph the results.

Predictions

Before you go to recess with the pedometer, predict what your total number of steps will be after recess.
Before you go to recess with the pedometer, predict whether you'll have the high, medium, or low number after coming in from recess.

Extensions

Curriculum Extensions/Adaptations/ Integration

Conduct a survey of favorite recess activities and graph the results.
Mark recess activity and weather. Does the weather affect how active or inactive students are? What types of patterns emerge? Have students fill out worksheet How Weather Affects My Activity.
Students with limited mobility could receive and extra 100 steps.
Students with limited mobility could walk with a partner and double their steps from recess.

Family Connections

Plan a "No Television" night at your house. Do some active things with your family.
Pick a place your family usually drives to (church, school, store) and decide to walk there instead.

Assessment Plan

Keep track of each student's pedometer steps and see if there is an increase in physical activity at recess.
Have the students journal what type of activities they are involved in at recess.
Sequence sample activities in order from least active to most active.

Bibliography

Dwyer, T., Salles, J.F., Blizzard, L., Lazarus, R., Dean, K. (2001). Relation of Academic Performance of Physical Activity and Fitness in Children. *Pediatric Exercise Science*, Volume 13, Issue 3, p225
This article studied the relationship of academic performance to physical activity and fitness in children and concluded that physical activity does enhance academic performance.
The results also showed that physical activity increased the secretion of tryptophan across the blood-brain barrier, having a calming effect in children enabling them to sit and concentrate on academic pursuits. Physical activity also increased the blood flow to the cortex of the brain. There is a positive relationship between physical activity and self-esteem in children.
Lister, D.O. (2005). Effects of traditional versus tactual and kinesthetic learning-style responsive instructional strategies on Bermudian learning-support sixth grade students' social studies achievement and attitude test scores. *Research for Educational Reform*, Vol. 10.2. pp. 24-40, 17p; (AN17490687)
This article investigated learning style characteristics and the effects of traditional instruction versus learning-style responsive instruction on student's achievement and attitude-test scores. Students performed significantly higher when emphasis on manipulation of resources and active engagement was emphasized rather than focusing on traditional instruction using lectures, discussions and worksheets.

Authors

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