

Best Lesson Plan

Grade Level: 2

Title of Lesson: Speed & Distance

Unit Title: Energy

Performance Standard(s) Covered:

S2CS7. Students will understand important features of the process of scientific inquiry.

b. In doing science, it is often helpful to work as a team. All team members should reach their own individual conclusions and share their understandings with other members of the team in order to develop a consensus.

S2P2. Students will identify sources of energy and how the energy is used.

b. Describe how motion energy is used.

S2P3. Students will demonstrate changes in speed and direction using pushes and pulls.

a. Demonstrate how pushing and pulling an object affects the motion of the object.

b. Demonstrate the effects of changes of speed on an object.

Essential Question: How are speed and direction related to one another? How is speed/direction related to energy?

Objective:

- Understand how differences in speed affects the amount of time it takes to travel a distance
- Understand how longer distances take a longer amount of time to travel, regardless of speed
- Understand how changing direction and deviating from a straight path can increase the amount of time it takes to travel a distance

- Understand how speed and direction are related to energy of motion

Key Words and Terms:

- Speed
- Direction
- Straight path
- Distance
- Energy
- Energy of motion
- Push
- Pull
- Friction
- Resistance
- Time
- Curve

Learning Activity

Abstract : Students will understand the basic concepts of speed and distance. Although the speeds that they will move at will not be the same, the concept is that the slower you move, the more time it takes to travel a given distance. If you move faster, it does not take as long to travel a distance. They will also understand that regardless of the speed you are going, it will always take longer to travel a further distance than a shorter one. Students will also use a stopwatch to learn how to use scientific tools and have a worksheet with a chart to understand how data is measured and recorded.

Materials Needed: 4 meter sticks, 2 stopwatches, worksheet with charts and questions that relate to the activity

Safety Concerns: Make sure there is enough room so that the children don't run into anything during the activity

Procedure:

- Before class: Print out enough worksheets for every student to have one

Preparation for activity:

- Review energy of motion and the two types of forces (pushes and pulls)
- Ask students to hypothesize what will happen to the amount of time it takes an object to travel if it is going the same speed but traveling different distances and why
- Explain the activity to the children and make sure that they all take turns in walking, running, etc. and using the stopwatch. Also explain how to use the stopwatch correctly and when to hit start and when to hit stop in order to get the best reading (it may not be completely accurate, but the idea is for them to be able to see that it takes a longer

amount of time to travel longer distances no matter what your speed is and also to see that it does not take as long to travel the same distance if your speed increases)

Activity:

- Have the students lay down the appropriate amount of meter sticks, depending on the chart. Have students volunteer or pick who will do the walking, power walking, jogging, running, etc.
- Make sure the student doing the action is standing behind the meter stick. Have the stopwatch handler count to three to signal for the other student to start moving.
- Record the amount of time (seconds) it took to travel the distance in the correct box.
- Repeat until you finish filling out the chart, then answer the questions that follow.

Assessment:

- Have a class discussion about the experiment and what they learned.
- You can also ask questions such as, “What do you think would have happened to the time if you changed direction instead of moving in a straight line?”

Notes and Tips: If time allows for it, you can have two students run the 4 meters instead of one. Record the time it takes for them to run (they should have 2 different times) and talk about why the times were different (each student ran at different speeds, so not everyone runs at the same speed). You can also do this with any of the actions. Another way you could teach direction is to have them travel and change direction constantly while walking toward the end of the meter stick to see how it affects the time. Second graders tend to be competitive and want to do everything, so make sure to allow everyone a chance in participating in the activity, whether it be laying out the correct amount of meter sticks, using the stopwatch, or completing the different actions.

References:

Name: _____

Date: _____

	1 meter	2 meters	3 meters	4 meters
Walking				
Power Walking				
Jogging				
Running				

1. How are speed and direction related? How does speed affect the time it takes to travel a distance?

2. How would friction affect the time?

3. How are speed and direction related to energy?