Pulleys

Description:
Participants will experiment with pulleys, uncover their utility, and show that they can increase their strength with a pulley.

Concepts:
• Pulleys decrease the effort needed to do a job.

Materials:
Dowels or broomsticks
Rope

Instructions:
Invite two kids to hold broom handles about two feet apart. Tell the group that you want someone to pull the two people together. They may only use the length of rope. (*WARNING they may not lasso each other.*)
Have different people try moving the two participants together. Share results.
Solution
Tie one end of the rope around one handle and then loop it over the other handle and back 5 or 6 times. Now, one small weak person can easily pull them together.

Followup
Can anyone tell me why looping the rope around the two dowels worked, but only looping it once was still very hard?
(Pulleys decrease the effort needed to do a job.)

Going Further
Explain that a machine makes a task easier by increasing power or increasing speed. Mechanical advantage allows a person to exert a stronger force with less effort. Each additional loop increases the mechanical advantage of a pulley.