

Compaction Action

Grade

3

Topic: Waste
Grade: 3
Duration: 30 - 45 minutes

Students will harness energy to make a machine to crush pop cans.

Curriculum Expectations

- 3s49: Investigate how different forces affect the operation of everyday devices, and design and construct devices that use a form of energy to create controlled movement
- 3s52: Investigate the ways in which different forces can change the speed or direction of a moving object
- 3s57: Ask questions about and identify needs and problems related to the behaviour of different forces in their immediate environment, and explore possible answers and solutions
- 3s59: Use appropriate vocabulary in describing their investigations, explorations, and observations
- 3s63: Describe the visible effects of forces acting on a variety of everyday objects
- 3e51: Listen to discussions and ask questions to clarify meaning

Background Information

At least one third of all garbage is packaging. You can make one new pop can or ten recycled cans with the same amount of energy. The recycled material that a truck can hold is in direct relation to how compact its load is. By compacting the recycling before it gets to the curb there are less trips trucks have to make to collect what is at the curb. This could save the school and your family money.

Accountability

Teachers and students will be aware the forces needed to compact garbage in the school. Students will become more aware of what can be done to reduce the number of trips it takes to deliver recycling to the depot.

Teacher Notes

1. Materials: clear bag of pop cans, bricks, cinder blocks, blocks of wood, (commercial can crusher - if possible).
2. Observe and discuss the amount of space taken up by the bag of pop cans.
3. Discuss what kinds of forces would be needed to crush the pop cans to create a smaller bag for recycling.
4. Place a pop can on a table. Put a cinder block on top or put on foot on top of the can. Tap the side of the can quickly with a pencil. The can will collapse. (The force of gravity and mass can only be overcome in the pop can when the side of the can is no longer a perfect cylinder and can no longer hold the mass exerted on it.
5. Have the students try to do the same. What kind of machine could be (or has been) created to do the same work? Discuss its uses in the school and home.

Home Extension

How could the recycling box at home benefit from compaction? Take lids off both ends of cans and crush them. Compact pop cans. Collapse boxes. Report after recycling day to discuss how their actions can make a difference.

Lesson Comments

What did your students find?

Who did they tell?

What creative solutions did they come up with?