

Lesson 18 Building an elevator III

Objectives: Students learn that they can improve their designs by reading about how existing mechanisms work.

Students learn to apply concepts learned from their research to their projects.

Materials: Same materials as used in previous lesson.

Inexpensive cordless electric screwdriver (one for each group - available at Walmart or Target for less than \$10).

Photographs from previous lesson.

Sponge: Students glue pictures from previous lesson into their journals and complete any documentation from previous lesson.

Students look at diagram of how a real elevator works in the book *The Way Things Work* by David Maculay.

Initial

Discussion: What are the advantages of the elevator design described in *The Way Things Work*? Why would using a counterweight make it so that the motor needs to lift less weight?

Project: If students built their elevators last time by tying string to the pulley attached to the motor, have them build an elevator similar to the one described in *The Way Things Work*, with the motor at the top. How much weight can this elevator lift without straining the motor?

If some students used counterweights in their first design, have them compare the amount of weight that the motor can lift when using each of the two designs (counterweight and tying string to motor's pulley).

Students build an elevator that can lift as much weight as possible and draw their designs in their journal. Drawings should be detailed enough that it could be used for reproducing elevator.

If students have completed their design and testing, show them the cordless electric screwdriver and have them try to envision a way to use it to improve their elevators. The motor of the screwdriver is much more powerful than the motors they have been using. How could they use it in their projects?

Vocabulary: Counterbalance, counterweight

Final

Discussion: Which elevator design allowed the most weight to be lifted with the least strain on the motor?

Clean up:

Home

Connection: