

Lesson 10 Potato Chip Factory Subsystem I

Objectives: Students will learn that they can use simple machines to make work easier.

Students will learn how to use the engineering design process.

Students will be able to brainstorm ideas for improving a factory subsystem and to choose an idea to build and test.

Materials: Simple machine stations from previous lesson.

Sponge: Engineering is Elementary handout 4-1.

Initial

Discussion: Review each of the simple machines tested in the previous lesson. Discuss results of handout Using Simple Machines.

Explain that in this lesson, students will design a potato chip factory subsystem that moves potatoes from the floor to the top of the table. This will simulate the loading dock at the potato chip factory. Pretend that a truck drops potatoes into a bin on the floor. Workers must lift the bin onto the table.

Discuss steps of the engineering design process (EiE handout 4-1).

Project: Students will create a model for improving the loading dock subsystem of a potato chip factory. When they are finished, they will write a letter to the president of the potato chip factory describing their improvements. They will also present their projects to several distinguished guests.

Guide students through the Ask handout (EiE 4-3).

Write the name of each of the five simple machines tested on an index card. Give one card to each group. Groups will use the assigned simple machine and one or two others.

Once students have decided, as a group, which simple machines to use, they complete the Imagine handout (EiE 4-4). Encourage students to come up with an idea that combines elements of several students' designs.

Once students have settled on a design, they complete the Plan handout (EiE 4-5).

Vocabulary: Factory subsystem

Final

Discussion: Students explain why they chose their plan.

Home

Connection: Have students look for examples of simple machines. Have students invite parents to last 15 minutes of Lesson 12.

Credits: Summarized from Museum of Science (Boston) curriculum Simple Machines: Industrial Engineering (see <http://www.mos.org/eie/>).