

Investigating a Technological System

Problem

How do the parts of a pen work together as a system?

Materials

Retractable pen

Small tray to hold the pen parts

Paper

Procedure *Be sure to answer any questions asked within the procedure of the lab*

1. Examine the retractable pen that your teacher gives you. *Predict how many parts make up the pen.*
2. Disassemble the pen completely. Be careful not to break or lose any of the parts.
3. Reassemble the pen. Click the pen on and off a few times, and then write with it. As you perform these actions, think about the sequence of events taking place outside the pen.
4. Think about how the pen functions as a technological system. *Describe the goal of the pen as a system. In addition, identify the inputs, process, and outputs of the system. Does the pen system include feedback?*
5. Identify any of the pen parts that might not be essential for meeting the system's goal. Then take the pen apart again and remove those parts. Reassemble the pen without them and test whether or not the pen functions.

Analyze and Conclude *Answer the following in complete sentences*

1. How many parts make up the pen system?

Of those parts, how many are essential to the pen's function?

What purpose do the nonessential parts serve?

2. What kind of input do you need to provide to make the pen work?

Describe the process and output that result from the input you provide.

3. How might adding a scent to the ink impact the sales of the pen?