How Does It Work? Draw the System

SD-B151 / THINKERS · AGES 13+

Explain a household device by drawing its parts and flows.

YOU NEED: One household device (a toaster, bike, faucet or kettle), pencil

ANALYZE	Pick a device. Predict what is inside and how it does its job.
CHOOSE	Draw the parts and label what each does. Use arrows for flow of energy, water or signals.
TEST	Check with a grown-up, a manual or a video. What did you get right and wrong?
REFLECT	Redraw one part. What question does the system still leave unanswered?

THE SYSTEM

Parts, labels and arrows.

What I got right and wrong

Right:

Wrong:

A question left

I still wonder

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A little help beside the learner. Read this page first; keep the answers here.

LEARNING GOAL
Practice breaking a device into parts and flows and checking a model against the facts.

BEFORE YOU BEGIN
You need: One household device (a toaster, bike, faucet or kettle), pencil. Do not open or plug in devices; look at diagrams instead.

HOW TO GUIDE
Choose a device that is safe to look at but unplugged and not opened. Do not take anything apart without a grown-up. Parts, flows and purpose are the pieces of any system, from a faucet to a school.

WHY IT MATTERS
Systems thinking helps teens see how parts work together. Predicting and then checking builds good modeling habits.

LOOK FOR THIS REASONING
Look for labeled parts, flows with arrows and an honest comparison with the facts.

IF THEY GET STUCK
Ask: what goes in? What comes out? What must happen in between?

MAKE IT GENTLER
Draw the outside and one arrow.

ADD A LITTLE STRETCH
Draw a second device and compare.

A USEFUL STOPPING POINT
Explain the device to someone who has never seen inside.