



# LESSON PLAN

## EDISON ROBOT MILO MAKER

### OVERVIEW

This delicious project centres around a topic kids are bound to enjoy: chocolate.

Be it a cup of hot cocoa to warm up on a winter's day or cold chocolate milk just about any time of year, instant chocolate drink is a favourite indulgence for kids of all ages. Whether your go-to brand is Cadbury, Nesquik or Milo, chances are you and your students are familiar with mixing up powdered chocolate drink. Use that familiarity to create a project that encourages experimentation while getting students to use good science practices, such as controlling variables.

### INVESTIGATION QUESTION

The most basic version of this project is to investigate the effect temperature has on getting the powder to dissolve. Students mix the chocolate into different temperature liquid (cold, room temperature and hot, for example) and see how long each takes to dissolve.

### OTHER VARIATIONS

Maxed out your experiments on temperature? There's plenty more to investigate! A few ideas:

- Which brand of chocolate powder mixes fastest?
- Which brand of chocolate powder mixes fastest at each temperature?
- What type of block chocolate (white, milk or dark) mixes into hot water first?
- Does adding marshmallows affect mixing time?

### USING EDISON ROBOTS

Like all experiments, keeping the variables controlled so only one thing changes at a time is key. If the point is to investigate the effect changing the liquid's temperature has on dissolving the powder, then all the other variables should remain constant. Students can help identify the variables that need to stay consistent for each test, such as the amount of liquid, the type of cup and the quantity of chocolate powder.

How do you control the variable of mixing with a spoon? It is very easy for a person to stir a bit faster or for slightly longer in one test than they did in the other tests by accident. Keep the 'mixing' variable in check by using a mechanical spoon!

Have students devise a way to attach a spoon to Edison's powered socket. They will also need to write code so that the robot's motor runs for a set amount of time at a specified speed when they run their program. This will allow them to keep the 'mixing' variable consistent across experiments.