Teacher Resources: Edison

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Table of Contents

STEMbound Contact Information

If anything seems missing or damaged, please contact us as soon as possible. Thank you!

Contact	Contact Information
STEMbound Team	Email: STEMbound@sourcewell-mn.gov

Website Quick Links		
STEMbound Home Page	Equipment Check-out Library Equipment Request	Consultant-led Learning Consultant-led Request
STEM Network	Partnership in Planning Request	Professional Learning

You can access the above links and more at: https://mn.sourcewell.org/education/STEMbound

Equipment Snapshot

Purpose

The **Edison V3 Robot** is a programmable, LEGO®-compatible educational robot designed to teach coding, robotics, and engineering concepts. Connect and program Edison with any device through USB and which also has internet access. It supports **block-based coding** (EdBlocks), **hybrid coding** (EdScratch), **and text-based coding** (EdPy based on Python) to grow with students' skills. Suitable for **ages 7+**, it can be used in K–12 classrooms across multiple content areas. Common use cases include coding lessons, STEM challenges, engineering design projects, and cross-curricular integrations with art, music, and physical education.

Operation

All information can be found at this link Getting started with Edison V3

Power On/Off: Press the round orange button to turn Edison on. Hold the same button to turn off.
Programming:

- Use barcode scanning for pre-programmed activities.
- Connect to EdBlocks, EdScratch, or EdPy via USB or EdComm cable.
    - The EdBlocks programming language app is at this URL: https://www.edblocksapp.com/
    - The EdScratch programming language app is at this URL: https://www.edscratchapp.com/
    - The Edpy programming language app is at this URL: https://www.edpyapp.com/

Movement: Edison has built-in motors, wheels, and sensors to follow lines, avoid obstacles, and respond to sound/light.
Building: Compatible with LEGO® bricks for extensions and mechanical builds.

Maintenance

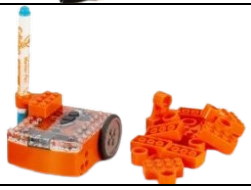
- Battery: Rechargeable via USB-C; ensure full charge before class.
- Storage: Keep robots in a dry, dust-free case. Avoid extreme heat or cold.
- Cleaning: Wipe with a soft, damp cloth (no chemicals).
- Updates: Check periodically for firmware/software updates on meetedison.com.
- Troubleshooting: Reset button located on the bottom of the robot if unresponsive.

Possible Projects

- Students create a maze on the floor of the classroom with tape and need to program the bot to navigate.
- Many projects and tutorials found on the links at the end of this document.

Contents Checklist

Please ensure all items and totes are present before and after use.

Item	Picture	Quantity
Edison Robots		15
Edison Charging Station		3
Edison Sketch Markers		20
Edison Marker Holders		15

Usage instructions

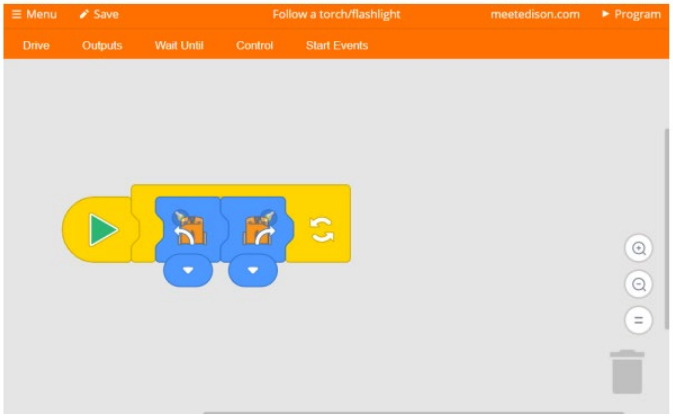
Power and recharging: Edison V3 robot comes with an internal Li-ion rechargeable battery with about 90 minutes of continuous driving time. The battery can be fully recharged from flat in 4-5 hours. There are two methods for recharging the battery.

1. USB: An individual battery can be recharged via the USB cable.
2. EdCharger: Five robots can be recharged using the EdCharger desktop charger included. Charge current is 180mA.

Getting started:

Turn Edison on by flipping the robot over. Slide the power switch to the 'on' position. Edison will make a chirping 'beep' and the red LED lights will start flashing.
Please note: Edison will turn off automatically if not used after 5 minutes, we recommend you turn the robots off manually when not in use.

Set up your programming devices for EdBlocks (Recommended for grades 2-4.): The best way to set up your programming devices is to run a test program in EdBlocks. Follow these instructions.

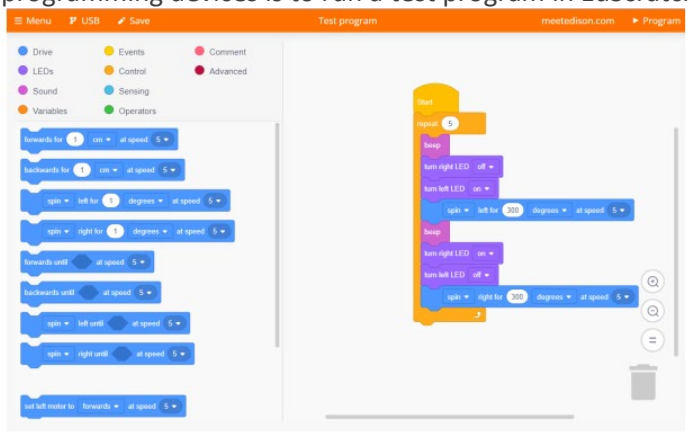


- Load the EdBlocks app by opening www.edblocksapp.com in a browser (Google Chrome is strongly recommended). Launch the programming app by pushing the orange 'Launch EdBlocks' button. Make sure you allow pop-ups for www.edblocksapp.com
- Once the app opens, you will see the programming environment. Open 'Menu' from the menu bar and select 'Load Demos'. A list of demo programs will open in a pop-up window. Select the program called 'Test program' which will load in the programming environment.
- Adjust your device's volume to maximum or 100%. Plug the EdComm programming cable into the audio jack of your device. NOTE: many devices have built-in safety settings that reduce the volume when an audio device is connected to the headphone jack. Always doublecheck the volume settings after plugging in the EdComm cable to your device.
- Turn your Edison robot on. Connect the EdComm cable to the bottom of the robot, near the power switch. Press the round (record) button one time.
- In the EdScratch app, press the 'Program Edison' button. Follow the instructions on the pop-up and then press the 'Program Edison' button on the pop-up to download the program into Edison. NOTE: if the

'There seems to be a network issue accessing the compiler' warning message pops up at this point, see 'Troubleshooting 1: Check the connectivity status' in the Troubleshooting for EdBlocks and EdScratch section of this guide.

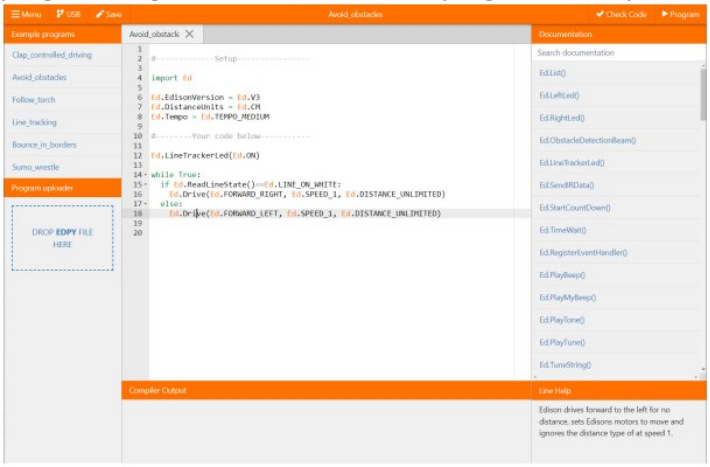
- While the program is downloading, you will hear a whirring sound, a bit like a dial-up modem. When the download is done, you will hear one of two sounds: the 'success' sound (the same chirping beep Edison makes when you first turn the robot on) or the 'fail' sound (a descending beeping sound)

Set up your programming devices for EdScratch (Recommended for 4-8): The best way to set up your programming devices is to run a test program in EdScratch. Follow these six steps to test EdScratch on your device:



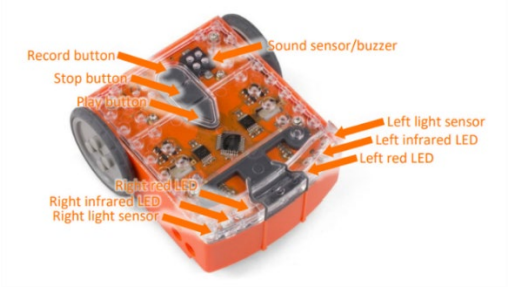
- Load the EdScratch app by opening www.edscratchapp.com in a browser (we strongly recommend Google Chrome). Launch the programming app by pushing the orange 'Launch EdScratch' button. Make sure you allow pop-ups for www.edscratchapp.com.
- Once the app opens, you will see the programming environment. Open 'Menu' from the menu bar and select 'Load Demos'. A list of demo programs will open in a pop-up window. Select the program called 'Test_program' which will load in the programming environment.
- Adjust your device's volume to maximum or 100%. Plug the EdComm programming cable into the audio jack of your device. NOTE: many devices have built-in safety settings that reduce the volume when an audio device is connected to the headphone jack. Always doublecheck the volume settings after plugging in the EdComm cable to your device.
- Turn your Edison robot on. Connect the EdComm cable to the bottom of the robot, near the power switch. Press the round (record) button one time.
- In the EdScratch app, press the 'Program Edison' button. Follow the instructions on the pop-up and then press the 'Program Edison' button on the pop-up to download the program into Edison. NOTE: if the 'There seems to be a network issue accessing the compiler' warning message pops up at this point, see 'Troubleshooting 1: Check the connectivity status' in the Troubleshooting for EdBlocks and EdScratch section of this guide.
- While the program is downloading, you will hear a whirring sound, a bit like a dial-up modem. When the download is done, you will hear one of two sounds: the 'success' sound (the same chirping beep Edison makes when you first turn the robot on) or the 'fail' sound (a descending beeping sound)

Set up your programming devices for EdPY (Recommended for Grades 9-12): The best way to set up your programming devices is to run a test program in EdPy. Follow these seven steps to test EdPy on your device:



- Load the EdPy app by opening www.edpyapp.com in a browser (we strongly recommend Google Chrome5). Launch the programming app by pushing the orange ‘Launch EdPy’ button. Make sure you allow pop-ups for www.edpyapp.com.
- When the app opens, you will see a prompt to select your Edison version. Choose the version of Edison that matches your robot. Once selected, the programming environment will load set-up for your version of the robot.
- On the left-hand side of the programming environment is the list of programs, including the ‘Examples’ demo programs. Select the program called ‘Test program’ which will load in the programming environment6 .
- Adjust your device’s volume to maximum or 100%. Plug the EdComm programming cable into the audio jack of your device. NOTE: many devices have built-in safety settings that reduce the volume when an audio device is connected to the headphone jack. Always doublecheck the volume settings after plugging in the EdComm cable to your device.
- Turn your Edison robot on. Connect the EdComm cable to the bottom of the robot, near the power switch. Press the round (record) button one time.
- In the EdPy app, press the ‘Program Edison’ button. Follow the instructions on the pop-up and then press the ‘Program Edison’ button on the pop-up to download the program into Edison.
- While the program is downloading, you will hear a whirring sound, a bit like a dial-up modem. When the download is done, you will hear one of two sounds: the ‘success’ sound (the same chirping beep Edison makes when you first turn the robot on) or the ‘fail’ sound (a descending beeping sound)

Edison Features: See the picture below to familiarize yourself with Edison's features.



- Record button
  - ☐ 1 press and you download program
  - ☐ 3 presses and you scan barcode
- Stop button
  - ☐ 1 press and you stop program
- Play button
  - ☐ 1 press and you run program

- Removable Skid is where you connect the robot to the device for programming.
- The line tracking sensor allows Edison to read and follow barcode pre-installed programs.

Connecting Edison to a computer or tablet: To connect Edison V3 to a computer or tablet, lift the USB cable out from underneath the robot and plug the USB cable into a USB-A port on the programming device.

Once the program has finished downloading, Edison will let you know if you have successfully programmed the robot or not by playing one of two sets of sounds:

- The ‘success sound’ set of beeps (the same chirping beep Edison makes when you first turn the robot on), indicating Edison has successfully received the program
- The ‘fail sound’ set of beeps (a descending beeping sound), indicating the program failed to download correctly.

Types of coding with Edison:

- Barcodes: Edison comes with several pre-set programs already loaded into the robot’s memory. These programs are activated when Edison scans one of the pre-set barcodes. The barcodes tell Edison to run the correct pre-set program when the triangle button is pressed. Find more information here: meetedison.com/barcodes/
- EdBlocks: EdBlocks is a fully graphical robot programming language that is super easy to use. A drag-and-drop block-based system, EdBlocks is intuitive and fun, even for younger users. Perfect for introducing anyone to programming, EdBlocks requires no prior coding knowledge to get started. Find more information in the extension resources section below.
- EdScratch: EdScratch is a vertical block-based programming language for the Edison robot based on Scratch. EdScratch combines the ease of drag-and-drop programming with powerful functionality and flexibility. Find more information in the extension resources section below.
- EdPy: EdPy is a highly versatile text-based programming language. EdPy is based on Python, a popular computer programming language renowned for being easy-tolearn with high readability. EdPy makes text-based programming fun by letting students see their code come to life in their Edison robot. With EdPy, students are learning the core of a real programming language and can take their exploration of robotics and coding to a more advanced level. Find more information in the extension resources section below.

Cleaning and Maintenance

- Battery: Rechargeable via USB-C; ensure full charge before class.
- Storage: Keep robots in a dry, dust-free case. Avoid extreme heat or cold.
- Cleaning: Wipe with a soft, damp cloth (no chemicals).
- Updates: Check periodically for firmware/software updates on meetedison.com.
- Troubleshooting: Reset button located on the bottom of the robot if unresponsive.

Troubleshooting Guide

Problem	Solution
Robot won’t turn on	▪ Make sure Edison is fully charged (USB-C charging required). ▪ Hold the orange button for at least 1 second. ▪ If still unresponsive, press the reset button (small hole on the bottom).
Robot not responding to programs	▪ Check that the program was successfully downloaded from EdBlocks, EdScratch, or EdPy.

	▪ Ensure the EdComm cable is fully connected and volume on the device is set to maximum when using sound transfer. ▪ Re-upload the program and confirm the correct app is being used.
heels not moving smoothly	▪ Check that there are no obstructions (dust, debris, LEGO® pieces stuck). ▪ Make sure the floor surface is flat and even. ▪ Reset the robot and re-upload the code.
Barcode programs not working	▪ Confirm Edison's barcode scanner window is clean and unobstructed. ▪ Ensure adequate lighting and place the robot directly over the barcode. ▪ Slowly drive Edison over the barcode until the "success beep."
Sensors not detecting	▪ Verify that the object/light/sound is within range of the sensor. ▪ Check the coding instructions for correct sensor use. ▪ Reset Edison if the sensor continues to fail.
Robot behaving unexpectedly	▪ Clear any previous program by pressing the stop button before running a new one. ▪ Check that the code does not contain overlapping or conflicting commands. ▪ Update Edison's firmware if issues persist.
General tips	▪ Always start with a reset if Edison seems unresponsive. ▪ Keep robots fully charged before class activities. ▪ Test programs on one Edison before deploying across a classroom set.

Extension Options

Cross-curricular uses

Grades K-2

ELA:
- Write and illustrate a short "robot adventure" story that Edison acts out
  - (MN ELA Benchmark: 0.6.3.3 – Use drawing, dictation, and writing to narrate an event).

Math:
- Program Edison to trace shapes like triangles and squares
  - (MN Math Benchmark: 0.3.1.1 – Identify and name basic two-dimensional shapes).

Science:
- Test Edison's reaction to light and dark spaces
  - (MN Science Benchmark: 0.1.1.2.1 – Observe and describe differences in physical properties).

Social:
- Program Edison to follow a simple classroom "community helper" map
  - (MN Social Studies Benchmark: 0.3.1.1 – Identify places in the school and community).

Art:
- Attach markers to Edison so it creates colorful line patterns
  - (MN Arts Benchmark: 0.1.1.5.1 – Explore line, shape, and color).

Music:
- Program Edison to stop and go in rhythm with claps or steady beats
  - (MN Music Benchmark: 0.1.1.3.1 – Respond to steady beat and rhythm).

Physical Education
- Build a simple robot obstacle course that Edison navigates
  - (MN PE Benchmark: 0.3.1.2 – Demonstrate movement in different environments).

Grades 3-5

ELA
- ELA: Write an instructional "how-to" text for programming Edison
  - (MN ELA Benchmark: 3.7.1.1 – Write informative/explanatory texts).

Math
- Program Edison to trace a rectangle and calculate its perimeter
  - (MN Math Benchmark: 3.3.2.2 – Solve problems involving perimeter).

Science
- Compare Edison's speed across carpet, tile, and wood floors

- (MN Science Benchmark: 3.2.2.2.1 – Demonstrate balanced and unbalanced forces).

Social Studies:

- Create a map of the school or neighborhood and program Edison to "deliver mail" between landmarks
  - (MN Social Studies Benchmark: 3.3.1.1 – Create and interpret simple maps).

Art

- Use Edison to design symmetrical or geometric artwork
  - (MN Arts Benchmark: 3.1.1.5.1 – Use geometric shapes in visual compositions).

Music:

- Program Edison to move faster with allegro music and slower with adagio pieces
  - (MN Music Benchmark: 3.1.1.3.1 – Identify and respond to tempo changes).

Physical Education:

- Design a "robot relay" challenge where groups code Edison to travel a set distance
  - (MN PE Benchmark: 3.5.3.2 – Work cooperatively with others in group activities).

Grades 6-8

ELA

- Write a "choose-your-own-adventure" story where Edison takes different routes based on reader decisions
  - (MN ELA Benchmark: 6.7.3.3 – Write narratives with multiple plot lines).

Math

- Math: Calculate Edison's speed using ratios of distance and time
  - (MN Math Benchmark: 6.2.3.2 – Use ratios, rates, and proportions).

Science

- Investigate Edison's sensor-based navigation and relate to real-world robotics
  - (MN Science Benchmark: 6.2.2.2.2 – Identify forms of energy and energy conversion).

Social Studies:

- Recreate a historical trade route map and program Edison to travel the path, explaining goods and cultures exchanged
  - (MN Social Studies Benchmark: 6.3.1.1 – Use maps to analyze spatial patterns of human settlement and movement).

Art:

- Use Edison as part of a stop-motion film project or installation
  - (MN Arts Benchmark: 6.1.3.5.1 – Integrate technology in artistic work).

Music:
- Program Edison's lights to flash in sync with rhythm patterns
  - (MN Music Benchmark: 6.1.1.3.1 – Compose and perform rhythmic patterns using technology).

Physical Education:
- Create a "robot fitness station" where Edison signals students to rotate activities
  - (MN PE Benchmark: 6.3.4.2 – Apply technology to enhance physical activity).

Grades 9-12

ELA:
- Write an argumentative essay on the societal impact of automation and robotics
  - (MN ELA Benchmark: 9.7.1.1 – Write arguments with valid reasoning and evidence).

Math:
- Math: Program Edison to follow parabolic or quadratic paths and compare to graph models
  - (MN Math Benchmark: 9.2.4.7 – Represent and interpret quadratic functions).

Science:
- Explore autonomous navigation and AI ethics in robotics
  - (MN Science Benchmark: 9C.2.2.1.1 – Evaluate the role of sensors in modern technologies).

Social:
- Social Studies: Simulate global trade by programming Edison to "deliver goods" along routes marked on a world map
  - (MN Social Studies Benchmark: 9.3.1.1 – Analyze how trade and globalization affect societies).

Art:
- Collaborate on an interactive installation where Edison responds to viewer input
  - (MN Arts Benchmark: 9.1.3.5.1 – Synthesize technology with artmaking).

Music:
- Program Edison to interpret simple musical notation with movements and lights
  - (MN Music Benchmark: 9.1.1.3.2 – Create original musical works using technology).

Physical Education:
- Design a robotics-assisted sport or challenge-based activity that incorporates Edison as part of gameplay
  - (MN PE Benchmark: 9.5.4.2 – Create innovative activities promoting lifelong fitness).

User Manual:
- Getting started with Edison V3

Video Tutorials:
- (167) Meet Edison - YouTube

EdBlocks Resources:

- EdBlocks programming language app - https://www.edblocksapp.com/
- Getting started with EdBlocks video - https://meetedison.com/robotprogramming-software/edblocks/#edblocksvideo
- Teacher's guide to EdBlocks lesson activities and student worksheets - https://meetedison.com/content/EdBlocks-teachers-guide-complete.pdf
- Student worksheet set: 23 lesson activity worksheets - https://meetedison.com/content/EdBlocks-lesson-activities-complete-set.pdf
- Block guide - https://meetedison.com/content/EdBlocks-block-guide.pdf

EdScratch Resources:

- EdScratch programming language app - https://www.edscratchapp.com/
- Teacher's guide to EdScratch - https://meetedison.com/content/EdScratch/EdScratch-teachers-guide.pdf
- Student worksheet set: 98 activities with 25 test space activity sheets - https://meetedison.com/content/EdScratch/EdScratch-student-lessonactivities.pdf
- Let's explore EdScratch video - https://meetedison.com/robot-programmingsoftware/edscratch/#lets-explore-edscratch
- EdScratch tutorial videos (set of 5) - https://meetedison.com/robotprogramming-software/edscratch/#edscratch-tutorial-videos

EdPy Resources:

- EdPy programming language app - http://www.edpyapp.com/
- Teacher's guide to EdPy student worksheets and lesson plans - https://meetedison.com/content/EdPy-teachers-guide-complete.pdf
- Student worksheet set: 38 worksheets with 9 activity sheets - https://meetedison.com/content/EdPy-student-worksheets-complete.pdf
- EdPy documentation help text offline guide - https://meetedison.com/content/EdPy-app-documentation-guide.pdf
- EdPy tutorial videos (set of 10) - https://meetedison.com/robot-programmingsoftware/edpy/#edpyvideoall