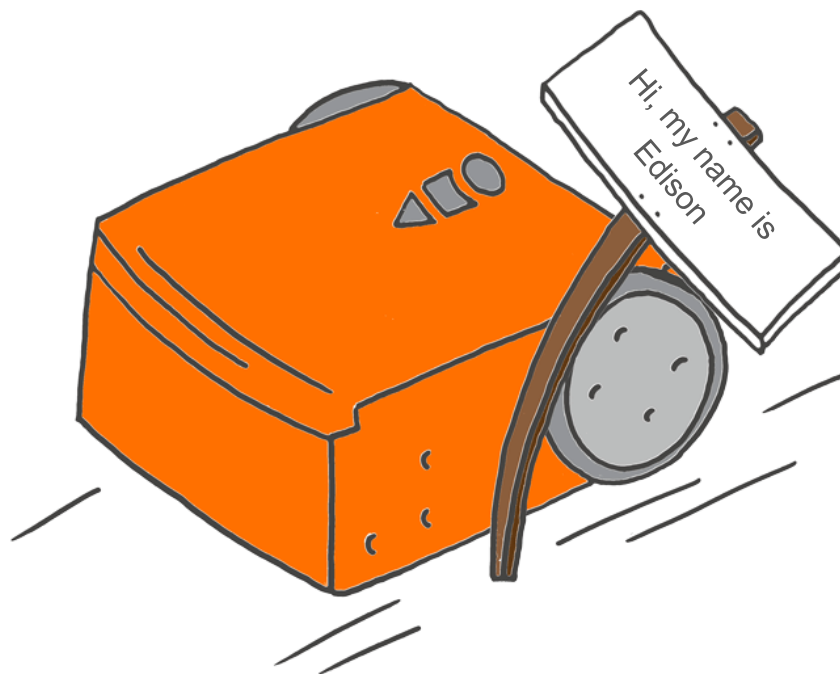




Edison and EdBlocks

Teacher's guide to getting started



The *Getting started with Edison and EdBlocks* set by [Kat Kennewell](#) and [Emma Dewar](#) is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).

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About this guide

This 'getting started' guide and the matched student activity sheets set is designed for new users of Edison and EdBlocks. This guide offers teachers and instructors a quick-start overview for using Edison robots with the EdBlocks programming language, available at <https://www.edblocksapp.com/>

The information contained here will help you set up your Edison robots and the programming devices (such as laptops, tablets or Chromebooks) that you will be using with EdBlocks. Once you have the robots and programming devices set up, you will be ready to run a wide range of EdBlocks activities using Edison, including the *Getting started with Edison* student activity sheets that go along with this guide, the [EdBlocks Hour of Code activities¹](#) and the full [EdBlocks lesson plans²](#).

Don't forget! You don't need to be an expert on Edison or EdBlocks to use the robots successfully!

Once the robots and programming devices are set up, you can start learning along with your students, using any of the Edison lesson plans or activities to guide you. The student sheets for all EdBlocks activities have been designed to allow students to work through the different parts of each lesson independently, discovering key computer science learning objectives and practicing new skills along the way. Complementary teaching guides offer further information about each activity to help make using the lessons easy and fun. Check out [meetedison.com³](https://meetedison.com) for the complete range of EdBlocks lessons, stand-alone activities and teaching guides.

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The *Getting started with Edison and EdBlocks* set is comprised of the student sheets and this guide. This set was developed using resources from the [EdBlocks Lesson Activities Collection⁴](#) and is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License⁵](#).

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¹ <https://meetedison.com/hour-of-code-edison-robot-activities/>

² <https://meetedison.com/robot-programming-software/edblocks/#edblocks-resources>

³ <https://meetedison.com/>

⁴ <https://meetedison.com/robot-programming-software/edblocks/#edblocks-resources>

⁵ <http://creativecommons.org/licenses/by-sa/4.0/>

Before you start

Before using Edison with your students, you will need to set up the programming devices, (i.e. the computers, laptops, Chromebooks or tablets) you will be using with the EdBlocks app and get the Edison robots ready.

This guide shows the basics and troubleshooting help for getting set up to use Edison with EdBlocks. Additional details, including information about Edison's other programming languages, can be found in the free *Getting started with Edison guide* available at <https://meetiedison.com/content/Get-started-with-Edison-guide-English.pdf>

Get Edison ready

To get Edison ready for use, you need to:

1. Open the battery compartment at the back of Edison and remove the EdComm programming cable.
2. Insert 4 'AAA' batteries. Please refer to the picture to ensure that the batteries are inserted correctly. Be sure to reclose the battery case by clipping the battery cover back on.



Ensure the batteries are in the right way.

Please note: Low or flat batteries can cause a range of issues with Edison. For this reason, always use fresh, fully charged batteries in your robots.

Choosing batteries: If using disposable batteries with Edison, only ever use alkaline batteries. (These are the most common standard AAA batteries you will find in just about any shop.) If you are using rechargeable batteries with Edison, only use nickel metal hydride (NiMH) rechargeable batteries. Never use lithium rechargeable, heavy-duty disposable, super heavy-duty disposable or carbon zinc batteries.

3. To turn Edison on, flip the robot over. Slide the power switch to the 'on' position, as shown in the picture. This will turn Edison on, and the red LED lights will start flashing.



Push the switch towards the 'on' symbol.

Please note: While Edison will turn off automatically if not used after five minutes, we recommend you turn the robots off manually when not in use.

Set up your programming devices for EdBlocks

The best way to set up your programming devices is to run a test program in EdBlocks. Follow these six steps to test EdBlocks on your device:

1. Load the EdBlocks app by opening www.edblocksapp.com in a browser (we strongly recommend Google Chrome⁶). Launch the programming app by pushing the orange 'Launch EdBlocks' button. Make sure you allow pop-ups for www.edblocksapp.com.
2. 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 'Drive example' which will load in the programming environment.
3. 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 double-check the volume settings after plugging in the EdComm cable to your device.

4. 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.
5. In the EdBlocks 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' section below.

6. 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)⁷.

SUCCESS: If the robot makes the 'success' sound, unplug it from the EdComm cable, then press the triangle (play) button on Edison one time to run the program. If the program runs successfully in the Edison robot, your programming device is ready to use! There's nothing further you need to do to set-up your device.

FAIL: If the robot fails to download the program, or the program does not play in the robot, work through the 'Troubleshooting' section that follows.

⁶ EdBlocks is compatible with Chrome, Safari, Microsoft Edge and Firefox. To ensure optimal performance, however, it is strongly recommended that you use EdBlocks with Chrome.

⁷ You can hear recordings of both the success and fail sounds at <https://meet Edison.com/edison-robot-support/trouble-shooting/#success-fail-sounds>

Troubleshooting

Depending on the type of programming devices you are using and your network, there are a few things you will need to do to troubleshoot your devices and get them working with the EdBlocks app.

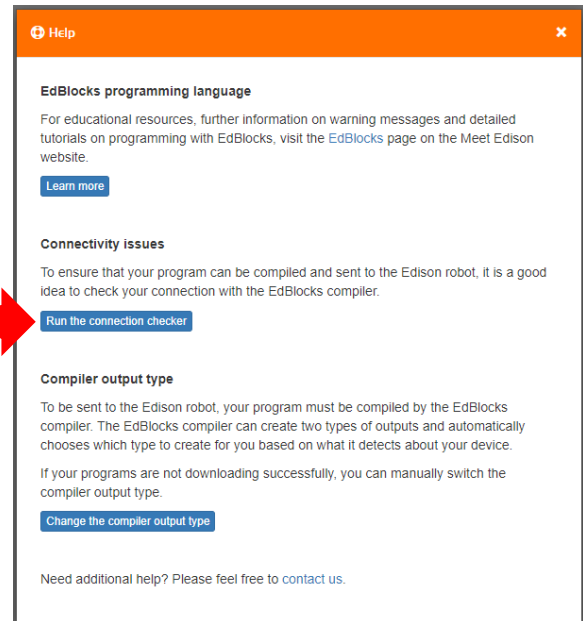
Troubleshooting 1: Check the connectivity status

If you see the *'There seems to be a network issue accessing the compiler'* warning message after pressing the 'Program Edison' button in the EdBlocks app or if the program failed to download successfully, you will need to check the app's connectivity status.

To work, the EdBlocks app needs to access the compiler (which is what converts the EdBlocks programs into a format that can be sent to the Edison robot). Inside the EdBlocks app at www.edblocksapp.com, open 'Menu' in the upper left-hand corner and select 'Help'. This will open a pop-up which includes the option to 'Run the connection checker'. Click this button to check your connection.

If the connection test result shows 'NO SERVER FOUND' then you may be behind a firewall, common at schools, which is blocking access to the compiler. You will need the network administrator to unblock ports 80, 8080, 443 and 8443 and white list these addresses:

- <https://local.edblocks.com>
- <https://api.edisonrobotics.net>
- 52.8.213.196
- 13.210.175.93
- 52.79.71.19



SUCCESS: Once the connection checker shows you are connected, try downloading and running a test program again. If the program downloads and runs successfully in the Edison robot, your programming device is ready to use! There's nothing further you need to do to set-up your device.

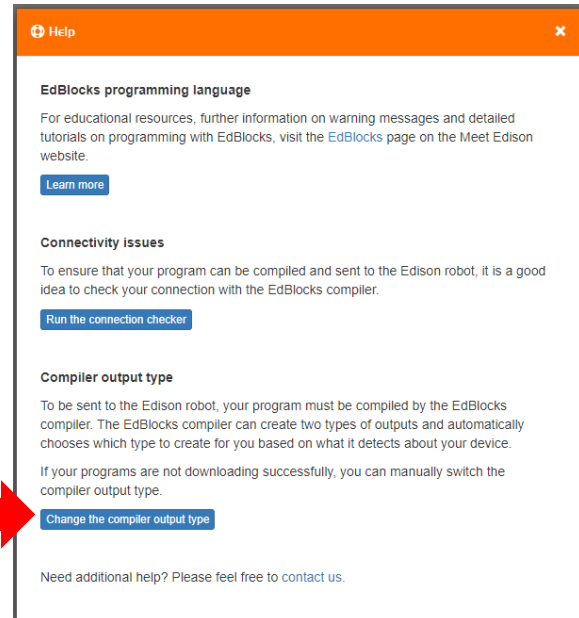
FAIL: If the connection checker shows you are connected, but you are still not able to program Edison, move on to 'Troubleshooting 2: Switch the compiler output type'.

Troubleshooting 2: Switch the compiler output type

To be sent to the Edison robot, your program must be compiled by the EdBlocks compiler. The EdBlocks compiler can create two types of outputs and automatically chooses which type to create for you based on the type of device it detects you are using (such as an Apple tablet or a Windows laptop).

If your programs are not downloading successfully, you can manually switch the compiler output type. Inside the EdBlocks app at www.edblocksapp.com, open 'Menu' in the upper left-hand corner and select 'Help'. This will open a pop-up which includes the option to 'Change the compiler output type'. Click this button to check what device and settings are being detected.

If the device being detected is not accurate, or if your programs are not downloading successfully, you can manually switch the compiler output type. Use the following information to select the output best suited to your device:



Long pulse compiler output

This output type works well on devices with low output volume, including some tablets. If you are using a Mac computer, an iPad tablet or a Windows or Android tablet, the long pulse compiler output should work best for your device.

Short pulse compiler output

This output type works well on devices with sound enhancement software, including most Windows desktop and laptop computers. If you are using a Windows desktop or laptop computer, the short pulse compiler output should work best for your device.

SUCCESS: Once you have changed the compiler output, try downloading and running a test program again. If the program downloads and runs successfully in the Edison robot, your programming device is ready to use! There's nothing further you need to do to set-up your device.

FAIL: If you are still not able to program Edison after changing the compiler output type, check the device-specific troubleshooting advice that follows.

Windows computers – troubleshooting

If you are running a laptop or desktop with a Windows operating system and are still unable to program Edison after running the set-up steps above, try these additional troubleshooting steps.

Disable sound enhancements

If you are using desktops or laptops running Windows operating systems and both the short pulse (recommended) and long pulse compiler output types are failing, you will need to disable sound enhancements.

Please go to <https://meetedison.com/edison-robot-support/trouble-shooting/#soundenhancements> to find step-by-step video guides showing you how to disable sound enhancements for standard Windows sound enhancements software as well as the most common third-party software programs.

Once you have sound enhancements disabled, use the long pulse compiler output option.

Check for a volume ‘hard lock’

Some devices, especially in Europe, have a hard lock on volume whenever an audio device is detected. This means that the device is ‘locked’ to only deliver a maximum volume of approximately 75% of the device max volume when an audio device is detected. To correct this, go into the device’s settings and disable the hard lock to enable the device to emit true full volume, even with an audio device plugged in.

Mac computers – troubleshooting

If you are running a Mac laptop or desktop and are still unable to program Edison after running the set-up steps above, try this additional troubleshooting step.

Check the volume settings

Some Macs experience audio clipping errors when attempting to program Edison. If you experience these issues, please try dropping your volume from 100% to between 50% and 90% instead.

Tablets – troubleshooting

If you are running an Apple, Android or Windows tablet and are still unable to program Edison after running the set-up steps above, try this additional troubleshooting step.

Check the volume settings

Many devices have built-in safety settings that reduce the volume when an audio device is connected using the headphone jack. Please check that your volume is

turned all the way up to 100% after plugging in the EdComm programming cable to your device.

Some devices, especially in Europe, have a hard lock on volume whenever an audio device is detected. This means that the device is 'locked' to only deliver a maximum volume of approximately 75% of the device max volume when an audio device is detected. To correct this, go into the device's settings and disable the hard lock, to enable the device to emit true full volume, even with an audio device plugged in.

Please note: most mobile phones do not have the audio output to program Edison using EdBlocks. We do not recommend using mobile phones as programming devices with Edison.

Chromebooks – troubleshooting

If you are running a Chromebook and still unable to program Edison after running the set-up steps above, try this additional troubleshooting step.

Disable sound enhancements

Some Chromebooks, including some Dell Chromebooks, have low audio output but also have sound enhancements. If you are using a Chromebook and both the short pulse (recommended) and long pulse compiler output types are failing, you will need to disable sound enhancements.

Sound enhancements are common on Windows machines and we have step-by-step video guides at <https://meet Edison.com/edison-robot-support/trouble-shooting/#soundenhancements> showing you how to disable sound enhancements for standard Windows sound enhancements as well as the most common third-party software programs. Depending on the manufacturer, your Chromebook may have similar sound enhancement software.

Once you have sound enhancements disabled, use the long pulse compiler output option.

Still not working?

You can find additional troubleshooting guidance on our website at <https://meet Edison.com/edison-robot-support/trouble-shooting/> or you can contact us for support at <https://meet Edison.com/edison-robot-support/contact-us/>

Our team of friendly Technical Support Officers will do their best to help you out!

Using the 'getting started' student sheets

If your students are new to Edison or EdBlocks it is a good idea to introduce them to the basics of the robot and programming language before jumping into a programming activity. The 'Getting started with Edison' student sheets are a hands-on introduction to Edison and EdBlocks. You can use these student sheets to help guide a teacher-led introduction or allow students to work through the different parts of the lesson independently.

The 'Getting started with Edison' lesson is arranged as four questions for investigation. Each of the questions is included in this guide along with relevant supporting information for that part of the lesson. Supporting information is divided into the following sections:

Overview

General information about the section and key learning objectives covered.

Delivery recommendations

Suggestions for how you can cover the lesson section if you want to run the lesson in a more facilitator-led capacity.

Tips and tricks

Helpful hints and ways to overcome common issues students may encounter.

Supplies you will need

- Full set of Edison robots and EdComm programming cables
- Full set of prepared programming devices
- 4x AAA batteries per robot
- Print-outs or digital copies of the student sheets
- Torches (flashlights)

Question 1: What is a robot?

Overview

Are all robots metal humans? Are they alive? Spend just a few minutes looking at what a robot really is and gaining a simple overview of the Edison robot.

Delivery recommendations

- Recommended time: 5 minutes

Tips and tricks

- If you have the time, expand this section. Start this lesson with a discussion: ask your students about their impressions of what robots are and what robots can do before you even get out the Edison robots or worksheets.

Question 2: How does the Edison robot work?

Overview

Grab the Edison robots! Demystify what lives below the surface of technology hardware by looking at where the robot's sensors are located and learning about the parts you need to program an Edison. Developing an understanding of Edison's parts will help students use Edison with confidence.

Delivery recommendations

- Recommended time: 5 minutes

Tips and tricks

- A great way to see Edison robots in action straight away is to run some of Edison's pre-set programs using the special [Edison robot barcodes](https://meet Edison.com/barcodes/)⁸. Using barcodes with Edison robots is one of the most unique and fun ways to kick-start your Edison adventure no matter your coding experience!
- Encourage students to refer back to the diagram of Edison's parts if they forget where sensors are or what buttons do as they work through this or future lessons.

⁸ <https://meet Edison.com/barcodes/>

Question 3: How do you make a program for Edison using EdBlocks?

Overview

The concept that computers, including the Edison robot, can be given instructions (as programs) is introduced along with the foundational computer science concept of sequence. Students learn that each block in an EdBlocks programs gives an Edison robot a specific command. When the program is run, the robot will follow each block one at a time, in order, starting with the first block on the left and moving left-to-right.

Delivery recommendations

- Recommended time: 5 minutes

Tips and tricks

- A little bit more information about the EdBlocks programming language:
 - There are different types of code blocks in EdBlocks. All code blocks are organised into different categories in the block pallet inside the EdBlocks app. A block guide containing all the blocks is available for download at <https://meet Edison.com/robot-programming-software/edblocks/#edblocks-resources>
 - To program Edison, drag the blocks you want from the pallet into the programming area and connect them to the start block to add them to a program.
 - Hovering a cursor over a block in the programming area will generate a tool tip with some English text. Each tool tip offers additional information about that block.
 - Blocks with a clock symbol have a number field below the block which allows users to specify an amount of time for that action to occur. This is a variable field inside EdBlocks which students can adjust to change a block's duration.
 - Blocks must be attached to the start block to be downloaded to Edison. Floating blocks not attached to a start block will not download to Edison.
 - You can remove blocks you don't want by dragging them into the trash bin in the lower right corner or back up into the block pallet.

Question 4: How do you download a program from EdBlocks to Edison?

Overview

This section gets students to actively use the robot as they work through an explanation of how to download a program from EdBlocks into the Edison robot. Students open an EdBlocks demo program that has already been made called the 'follow a torch' program. Once students have successfully downloaded the program to their robot, they can run it in their robot and use a torch to control where Edison drives.

Delivery recommendations

- Recommended time: 10 minutes

Tips and tricks

- Remember that some devices, especially tablets, automatically lower the volume when they detect that an audio device has been connected to the audio jack. Explain to students that they should check that the volume on the computer or tablet is still turned up to 100% after they plug the EdComm cable in.
- The student worksheet contains a list of download steps. Steps 1,6,7, and 8 are the steps students will always need to download a program to Edison. This is true for other demo programs and their own programs.
- Take the time to get students comfortable with the download process:
 - While a program is downloading to Edison, Edison makes a whirring sound.
 - Once the program downloads successfully, Edison will make a chirping beep. Remind students not to unplug the EdComm cable until after they hear the success sound beep.
 - If the program fails while downloading, Edison will make a 'fail beep'. You can hear what the success and fail noises sound like at <https://meetiedison.com/edison-robot-support/trouble-shooting>
- When many students are downloading programs at the same time, you may experience slower internet speeds. This can result in the app taking longer to create the 'program Edison' pop-up box button and for the programs to download into Edison. Remind students to listen for the success sound before unplugging their EdComm cable. The success sound is the signal that the program has fully downloaded.
- Edison's light detecting programs rely on reading the difference between the light input to the two light sensors. If students are struggling with a light detecting program, remind them to point the light at only one of the two sensors, not straight at the front of Edison.

- If there is another very bright source of light in the room, like sunlight coming in from a window, students may find this over powers their light and the robot will head towards the brighter light instead.

What's next?

Once you and your students are set up with Edison and EdBlocks, you are ready to try all sorts of EdBlocks activities using Edison. Here are some options to get you started:

- Consisting of the Student Set and accompanying Teacher's Guide, [The EdBlocks Lesson Activities Collection](#)⁹ includes 23 activities, perfect for progressing through EdBlocks using Edison robots.
- Make your Hour of Code a tangible, hands-on experience with [Hour of Code Edison robot activities](#)¹⁰.
- Try out some cross-curricular STEAM [stand-alone educational activities](#)¹¹.

⁹ <https://meet Edison.com/robot-programming-software/edblocks/#edblocks-resources>

¹⁰ <https://meet Edison.com/hour-of-code-edison-robot-activities/>

¹¹ <https://meet Edison.com/educational-activities/>