Grant application starter guide

Written copy to get you started with your Edison robot grant application

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Contents

About this guide

Here at Microbric, the team behind the Edison robots, we understand that the budget process can be painful. Getting purchases approved can be a challenge, especially if you need to apply for the funds. Pulling together all the information you need for a grant proposal or budget request can be a time-consuming and annoying process.

We hope that this guide will help make it a little faster and easier.

Here you will find suggestions and sample written copy about the Edison robot suite addressing the most common topics educators tell us they have to cover in their grant applications. Please feel free to use this content as you see fit in your application.

Don't forget that our team are here to help! If your application requires information not covered in this guide, or you need a quote for your intended purchase, reach out to us at https://meetedison.com/edison-robot-support/contact-us/. We will do our best to provide you with any additional information you need.

The key to a successful grant

The #1 tip to writing a successful grant is: **deliver exactly what they ask for in the application.**

Follow the exact directions provided when completing and submitting the application. Be sure you include all the information you are asked for and pay attention to formatting requirements, including word count. It's not uncommon for grantors to reject (and potentially not even read) applications that do not follow their format or guidelines.

Remember also that there's a human reading your application on the other side. Make sure your answers are clear, specific and to the point. Avoid unfamiliar acronyms and unnecessary jargon wherever possible.

Overview of Edison

Use this information to:

- Familiarise the grantor with the Edison suite of products in your introduction, overview or summary sections.

- Demonstrate that you have done your research in selecting Edison as a solution.

- Highlight the aspects of Edison, such as the particular programming language, you are planning on using in your classroom.

What is Edison?

Edison is a robust educational robot and a complete STEAM teaching resource designed to bring coding to life for students from 4 to 16 years of age. Edison helps deliver meaningful computational thinking, computer programming and 21st century education in an engaging, hands-on way.

Designed for the classroom environment, Edison robots are durable, have no loose parts to manage, and thanks to their compact size, are easy to store. Edison works right out of the box, fully pre-built with all sensors ready to use. There's no software to install or manage, making it easy to use Edison with different device types and platforms, including laptops, Chromebooks and tablets.

Edison robots can be programmed using three progressive programming languages plus unique barcodes which activate pre-set programs in the robots. Barcode programming with Edison is a device-free option that requires no coding experience, making getting started using Edison robots incredibly easy for students of any skill level. Students can then progress through the different programming languages as their skills increase, working from icon-based drag-and-drop coding, through block-based coding and on to text-based programming. All of the Edison robot's programming languages are free to use for unlimited users and no registration is required.

Each Edison robot includes sensors, motors, buttons, lights and removable wheels, offering students an incredible range of ways to interact with the robots. The Edison robot's different sensors can detect different things including sound, visible light and infrared light. The robot can be programmed to react to the different inputs it detects using any of the three progressive programming languages available. Edison can also be used with any LEGO brick compatible building system, including the EdCreate robot creator's kit.

Complete lesson plans, teacher guides and student activities written at grade-appropriate reading levels and focused on topics students love are available for free from the meetedison.com website. These flexible educational resources include self-

directed lessons and activities, allowing for differentiated learning options and enabling students to work at their own pace, building key skills as they progress. Extension activities, challenges and open-ended projects using Edison let students further invest in their own learning, exploring a range of skills across mathematics, science, critical thinking, engineering and more.

Additional information about Edison robots can be found at https://meetedison.com/

What is EdBlocks?

EdBlocks is a fully graphical robot programming language for the Edison robot 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 is ideal for students aged 8 to 12 years old.

EdBlocks is supported by free-to-use educational resources, including the EdBlocks student activity worksheets, designed to allow students to work through activities independently, gradually learning about both the Edison robot and EdBlocks. This set of 23 lesson activities is perfect for students in year levels 3 to 6. A complementary teacher's guide offers educators overviews, activity extensions and other supporting information for the EdBlocks lesson activities to help make teaching EdBlocks easy and fun.

Additional information about EdBlocks can be found at https://meetedison.com/robot-programming-software/edblocks/

What is EdScratch?

EdScratch is a vertical block-based visual programming language based on Scratch. EdScratch combines the ease of drag-and-drop programming with powerful functionality and versatility. The result is a robot programming language that is easy to learn and offers a robust platform for computer science education. EdScratch's intuitive layout and the simplicity of block-based coding makes EdScratch an ideal programming language for students aged 10 and up. Helpful features, like the built-in bug box, make the transition to using more complex programming structures approachable even with no prior coding experience. As students gain confidence in coding, they can do even more by controlling inputs, manipulating data, and creating and utilising variables, making EdScratch a perfect platform to use Edison's features in engaging, creative ways.

EdScratch is supported by free-to-use educational resources, including the student set of EdScratch lesson activities, which contains worksheets and activity sheets designed for independent use by students in year level 5 (10-11 years old) and above. With 98 activity options organised into six units, the student set contains a mix of structured and open-ended activities that introduce key concepts and learning objectives while engaging students in an active exploration of Edison and EdScratch. A complementary teacher's guide offers educators overviews, delivery

recommendations and other supporting information for the EdScratch lesson activities to help make teaching EdScratch easy and fun.

Additional information about EdScratch can be found at https://meetedison.com/robot-programming-software/edscratch/

What is EdPy?

EdPy is a highly versatile text-based programming language for the Edison robot. EdPy is based on Python, a popular real-world computer programming language renowned for being easy-to-learn 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.

EdPy is supported by free-to-use educational resources, including the EdPy student worksheets, designed to allow students to work through activities independently, gradually learning about both the Edison robot and test-based programming in EdPy. The EdPy lessons contain 38 worksheets organised into 10 progressive lessons and are perfect for introducing text-based programming to students in year level 7 (13+ years old) and above. A complementary teacher's guide offers educators overviews, an answer key and other supporting information for the EdPy lessons to help make teaching EdPy easy and fun.

Additional information about EdPy can be found at https://meetedison.com/robot-programming-software/edpy/

What is EdCreate?

The EdCreate Edison robot creator's kit is a 5-in-1 expansion pack construction system designed specifically for the Edison robot. The EdCreate kit consists of 115 interlocking building blocks, axles, pegs, gears, and other parts. The individual EdCreate pieces are designed with studs and holes which are compatible with Edison robots and any other LEGO brick compatible building system.

EdCreate enriches students' STEM education experience through interactive engineering and programming projects. The EdCreate system can be used with Edison robots to complete five pre-set EdBuild projects. The EdBuild projects scale in difficulty and require progressive levels of coding capabilities, making them a perfect addition to the Edison programming and STEAM curriculum. Each EdBuild project includes full language-free instructions in both video and still-images formats, allowing for multimodal learning. EdCreate can also be used in a wide range of open-ended engineering, design and programming challenges.

EdCreate is supported by free-to-use educational resources, including a teacher's guide, the EdBuild student guides, extension activities, design challenges and inquiry-based learning scaffolds. Using EdCreate with Edison robots offers students meaningful, engaging opportunities to find STEM applications to real-world scenarios while promoting creativity and problem-solving.

Additional information about EdCreate can be found at
https://meetedison.com/edcreate/

Grade levels and student ages

Edison is a complete STEM teaching resource for coding and robotics education which grows with students. With lesson plans, teacher guides and student activities written at grade-appropriate reading levels and focused on topics students love, Edison helps deliver coding and STEAM education across primary, middle and early high school.

Programming

Students age (years old)	Recommended programming type	Prerequisites
4+	Barcodes and remote controls	No prior experience with programming or robotics is assumed or required.
7+	EdBlocks	No prior experience with programming or robotics is assumed or required.
10+	EdScratch	A basic understanding of programming fundamentals may be helpful.
13+	EdPy	A basic understanding of programming fundamentals will be helpful.

Lesson plans

The recommended student ages and grade levels for the lesson plans are based on the average reading level of the student materials.

Programming language	Grade level (school year)	Students age (years old)
EdBlocks	3+	8+
EdScratch	5+	10+
EdPy	7+	13+

EdCreate

EdBuild	Students age (years old)	Programming skills needed
EdTank	8+	Barcodes and remote control
EdDigger	8+	Barcodes and remote control
EdRoboClaw	8+	Barcodes and remote control
EdCrane	10+	Barcodes and remote control **AND** EdScratch **OR** EdPy
EdPrinter	12+	EdPy

Why Edison?

Some applications ask you to explain why you have selected a particular product over alternatives. If the application you are completing asks you to compare and justify your selection of Edison, the following points may help you form your answer.

Points to consider

The category of the robot, compared to other types of robots (for example, kit-based robot systems).

- Edison is a computer-programmable robot, purpose-built for teaching upper primary and middle school students core coding and computational thinking concepts through a mix of progressive lessons and stand-alone activities. Fully-assembled, these robots include a range of sensors and functionalities to enable more creative and complex coding using on-screen block-based and text-based programming languages.

- Read more at https://meetedison.com/how-to-choose-the-right-robot-for-your-classroom/

Edison's scope of use

- Edison is very scalable. The robots are designed for use with students from 4 to 16+ years of age across progressive programming languages and are

supported by multiple levels of physical computing, robotics and engineering projects.

- Edison can be used to teach a multitude of topics including coding, computational thinking, STEAM and 21st Century skills.

- Edison can be used to enhance other subjects, including mathematics and physical science.

- Edison offers opportunities for differentiated and multimodal learning.

Value for money

- Edison offers more built-in sensors than any robot in its class as well as lights, sounds and autonomous behaviour capabilities.

- Edison is priced for educators, including bundle-packs designed to make 1:1 student-to-robot ratios possible in the classroom.

- All educational materials (including lesson plans, teacher guides, student activities and design challenges) are free to use, available on www.meetedison.com with new activities added regularly.

- All programming applications (EdBlocks, EdScratch and EdPy) are free to use for unlimited users and require no user registration.

Designed for the classroom

- Edison is durable, compact in size and self-contained, making classroom management and storage easy.

- Edison robots require no additional software. The online programming applications are compatible with laptops, tablets and Chromebooks, making them a good choice for schools that already have computing equipment as well as BYOD (bring your own device) schools.

- Edison is programmed using the unique EdComm cable which works with the programming device's audio jack. This programming method dramatically reduces set-up time and eliminates 'cross-talk' issues that can occur with Wi-Fi or Bluetooth robot-to-device connections.

- The meetedison.com website offers support information across the most common topics educators encounter and additional technical support is available through the company's Technical Support team at https://meetedison.com/edison-robot-support/contact-us/

Using Edison

Use this information to:

- Explain your plans for using the Edison suite of products.

- Highlight how Edison helps address your target educational outcomes.

How will you implement Edison?

Some applications ask you to explain your plan for using your Edison products. The following points may help you form your answer.

Points to consider

The basics of your plan (where, who, when).

- Educational setting (general classes, technology or specialist classes, electives, clubs, etc.)

- Ages and grade level(s) of your students

- Educators who will teach using Edison (yourself, colleagues, etc.)

- Term or lesson schedule plan

What subjects/topics will you teach with Edison?

- Coding, computer science and computational thinking

- Integrated subjects (STEM, STEAM, etc.)

- Project-based and inquiry-based learning

- Other subjects (mathematics, English language arts, engineering, physical sciences, etc.)

Project/learning evaluation

- How will you evaluate the success of your project? (Implementation timeline, number of students exposed, etc.)

- How will you evaluate student learning? (Pre-and-post learning tests, student project showcases, aptitude evaluations, grades, self-evaluations, etc.)

Keywords to look for in standards

Many grants ask for specific learning outcomes or standards to be addressed by the proposed solution. Look for these example keywords in your standards to find which standards your project aligns to:

- "defining and delimiting engineering problems"

- "define a design problem that can be solved through the development of an object, tool, process, or system"

- "developing understanding and skills in computational thinking"

- "create and use a range of digital solutions"

- "use physical computing devices, including robots"

- "explore a range of digital systems with peripheral devices for different purposes"

- "collect, explore and transmit different types of data"

- "develop algorithms involving branching (decisions) and user input"

- "recognise and explore patterns in data"

- "implement digital solutions as visual programs"

- "follow, describe and represent a sequence of steps and decisions"

- "design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition)"

- "solve problems involving measurement and conversion of measurements"

- "represent and interpret data"

- "consider and provide solutions for real-world problems"

- "demonstrate reading comprehension by accurately following instructions"

What else is needed?

Some applications ask you to list the additional products and services you will need in order to implement your solution with your Edison products. The following points may help you form your answer.

Points to consider

Additional supplies

- Batteries (4x AAA batteries per robot plus replacements or charging solution)
  - If using disposable batteries: only use alkaline batteries. Never use heavy-duty, super heavy-duty or carbon-zinc batteries.
  - If using rechargeable batteries: only use nickel-metal hydride (NiMH) rechargeable batteries. Do not use lithium rechargeable batteries.

- Programming devices (such as laptops, Chromebooks or tablets)

- Spare parts packs

- EdCreate kits

- Storage containers

- Print-outs (including EdMats, student activity sheets and teacher guides)

Additional services

- Professional development with an Edison trainer (see more at https://meetedison.com/edison-robot-training-organisations/)

The bigger picture

Use this information to:

- Offer context about how the Edison suite of products helps address specific educational outcomes you are seeking.

- Build a statement of the problem you are facing in your introduction, overview or summary sections.

- Explain the value of your proposal in broader terms.

Points to consider

The value of coding

- Coding helps kids develop academic skills, learn perseverance and organisation, and gain invaluable problem-solving skills.

- Programming provides hands-on opportunities to work through creative problem solving independently and collaboratively.

- Understanding computers and learning the basics of coding helps children develop an appreciation of how things work, particularly the technology in their everyday lives.

- Having strong foundations in coding and technology will be crucial for success in tomorrow's workforce.

- Coding helps make thinking processes, including logical thinking and computational thinking, tangible. Likewise, coding can help students develop metacognition capabilities.

- Coding helps students see the real-world value of (and learn how to have fun with) mathematics.

The value of robots

- Programmable robots, including Edison robots, help students build a strong foundation in technology, technological literacy and programming. They give students of all levels the skills to make computers work for them, allowing kids to become technology creators, not just consumers.

- Students need activities that are accessible to them. Robotics engineering can be tackled at any level by students of all backgrounds and all achievement levels. Vocabulary is not a roadblock and math skills are developed and applied along the way.

- Students need opportunities to develop the soft skills that are so necessary for industry – skills like communication, collaboration, resilience and creativity.

Robotics gives students opportunities to share ideas and collaborate with others. Students work with partners and teams and are inspired and encouraged by the creative design solutions of others. They are encouraged to think outside the box, ask "what if" questions, evaluate resources and work together.

- Robots bring computer science to life. Unlike on-screen only coding, robots let kids really see their programs working. Programmable robots provide kids with instant, tangible feedback by allowing them to test in the real world as they go. This provides students with direct feedback when coding, helping them discover and fix any issues as things happen, building decomposition and debugging skills.

- The combination of robots with coding teaches kids critical skills, such as problem-solving and communication, in an engaging, fun, and effective way.

- Robotics caters to all different learning styles. Visual learners benefit from seeing the robot moving and matching the robot's actions to their code. Tactile learners are far more connected to something they can literally get their hands on than just a computer screen. Active learners, and kids who struggle with focus, benefit from the interaction a robot provides over just staring at a monitor.

Additional product details

Use this information to:

- Provide specific technical details required in your grant application.

Pricing

Edison robots are designed for the classroom – and so is our pricing. If you are ordering through the meetedison.com website, then our educator discounts are pre-built into our pricing in the form of bundle-packs and bulk discounts. That's why a single unit of Edison is $49 USD, however, in a class pack of 30 robots, each unit is discounted to $33 USD. Plus, if you purchase a bundle and any additional lone products in the same order, you will be charged the bundle unit price on all applicable items. The bundle and bulk discounting are automatically applied to orders placed through our website and in the prices listed on the quotes we provide. You can learn more about on our bundle packs and bulk discounts in our price list at https://meetedison.com/content/Customer-Price-List-website.pdf

If you need a quote for your intended purchase, reach out to us at https://meetedison.com/edison-robot-support/contact-us/

Product warranty

The Edison robot is covered by a 12-month replacement warranty. For all other products and accessories, Microbric will replace, refund or supply replacement parts at the company's discretion based on availability and the nature of the fault for a period of 12-months.

The product warranty can be viewed at https://meetedison.com/shipping-returns/

Technical overview

Technical specifications about the Edison robot.

Programming Edison

Edison is programmed using any of the Edison robotic programming languages, EdBlocks, EdScratch and EdPy.

Programs are downloaded to Edison using the EdComm cable. The EdComm cable is the special cable used to download programs to Edison robots from any of the Edison robotics programming languages. The EdComm cable is how you connect

your Edison robot to a computer or tablet. The EdComm cable plugs into the computer's headphone jack and carries a pulsed audio signal to a high-efficiency infrared (IR) LED. The IR LED converts the pulsed audio signal into light that is received by Edison's line tracker phototransistor and loads the program into the processor.

To connect Edison to a computer or tablet, plug the audio jack end of the EdComm cable into the 3.5mm (1/8") audio output socket on your programming device. The other end of the EdComm cable connects to the underside of your Edison robot, near the power switch. This communication method is compatible with Mac, Linux, Windows, iOS and Android operating systems.

Sensors and inputs

Obstacle detection: Infrared using 2 IR LEDs (top front left and right) and IR receiver module (doubles as the IR data comms and remote-control receiver)

Remote control: IR receiver module (which operates at 38kHz) allows Edison to learn IR codes from most standard TV/DVD remote controls

Infrared data comms: IR receiver module (double as obstacle detection sensor and IR remote receiver)

Line tracker: Red LED and phototransistor (doubles as a barcode reader and programming port)

Light sensors: 2 phototransistors (top front left and right)

Sound sensor: Piezo transducer (doubles as sounder)

Outputs

Drive: Differential two-wheel drive system with wheel encoders (Edison V2.0 models)

Infrared data comms: 2 infrared (IR) LEDs (double as obstacle detection sensor)

Sound: Piezo buzzer (doubles as a sound sensor)

Lights: 2 red LEDs (Front left and right)

Processor

Freescale 8-bit MC9S08PA16VLC

Power

Battery: 4 x AAA (UM 4) Alkaline or Ni-MH

Need additional information?

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