

Coding and robotics platforms matrix

| Beginner | | | |
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| Platform | Description | Resources, Activities and Ideas | Cost |
| Squishy Circuits | Create circuits and explore electronics using play dough. | <ul style="list-style-type: none"> Building squishy circuit instructions and activities are available here. | Low |
| BeeBot Bluebot | Easy to operate robots that are a perfect tool for problem-solving, and just having fun! Bluebot can be controlled via Bluetooth or directly via the on-board keys. | <ul style="list-style-type: none"> Create a map on giant grid paper then program the Beebot/Bluebot to visit different destinations. Tell the story as the BeeBot/Bluebot travels through each place. Build a miniature city or diorama using blocks, cardboard and other craft materials then program the Beebot/Bluebot to move through the obstacles. Use craft materials to turn your Beebot/Bluebot into another little creature like a ladybug or turtle. For more activities click here. | Mid |
| Ozobot Bit | Use colour markers to create a path for your Ozobot. Solve group challenges using the Ozobot apps or by colouring code commands. Available on iTunes and Google Play. | <ul style="list-style-type: none"> Get your robot dancing by programming new moves into the OzoGroove App. Explore the Ozobot Suite and complete hundreds of coding challenges. Customise your moves by coding your Ozobot using Ozoblockly. Use markers and other craft materials to create a story path for your Ozobot to explore. Use the code sheet to control the speed and actions of the Ozobot. For more resources click here. For more information here. | Low |

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| <u>Scratch Jnr</u> | An app that allows you to program interactive stories and develop creative animations. Learn to solve problems and design projects. Available on iTunes and Google Play. | <ul style="list-style-type: none"> • Code characters to create a simple animated story. Use the features to enter text, record your voice and take photos. | Free |
| <u>Daisy the Dinosaur</u> | Learn the basics of coding with this fun and free app. Available on iTunes. | <ul style="list-style-type: none"> • Explore the basics of coding in challenge mode and experiment with code in free play mode. | Free |
| <u>Kodable</u> | Learn the basics of coding with this fun and free app. Available on iTunes and Google Play. | <ul style="list-style-type: none"> • Explore the basics of coding by working through challenges and unlocking new characters. | Free (In-app purchases) |
| <u>Cubelets</u> | With the Cubelets Six, you can create simple mobile and reactive Cubelet robots. | <ul style="list-style-type: none"> • For resources and ideas click <u>here</u>. | Mid-High |
| <u>Make Wonder Dot & Dash</u> | Download the Wonder App, connect to Dash or Dot and use code to create your program. Available on iTunes and Google Play. | <ul style="list-style-type: none"> • Use the <u>apps</u> to explore challenges and code Dash/Dot • Use blocks, boxes and other obstacles to create an <u>obstacle course</u> for Dash/Dot to navigate through. • Use craft materials to turn Dot/Dash into another character then create and code a <u>story/presentation</u>. • For more ideas click <u>here</u>. | Mid-High |
| <u>Soft & Paper Circuits</u> <u>Chibitronics</u> | Create simple LED circuits using LED stickers and copper tape. Create parallel circuits, switches and sliders. | <ul style="list-style-type: none"> • Create a postcard with a theme and incorporate a <u>simple circuit</u>. • Make a soft circuit <u>wristband</u> or <u>bow tie</u> using fabric or paper. • Create a <u>light up helicopter</u>. | Low-Mid |

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| <u>LEGO® Movie Maker</u> | Create an animation; add sound effects, graphic effects, titles and credits with this free app. Available on iTunes. | <ul style="list-style-type: none"> • Create a short animation using plasticine, Lego and other craft materials. | Free |
| <u>ABCya Animate App</u> <u>ABCya Animate Desktop</u> | ABCya! Animate is a creative tool for children to make and share animations on iPad or computer! | <ul style="list-style-type: none"> • Create a short GIF animation to tell a story. | Free-Low |
| <u>Biteable</u> | Create simple animated videos online in minutes using pre-loaded graphics and your own text. | <ul style="list-style-type: none"> • Create promotional material for an event. • Create an animation of anything you like by uploading your own images. | Free |
| <u>Bristle Bots</u> | Bristlebots are a cheap, easy, and fun-to-build robot made from the head of a toothbrush, a battery, and a small motor. | <ul style="list-style-type: none"> • Design and build a bristle bot then race them on paper tracks. | Low |
| <u>Rainforest Coding</u> | This program introduces Scratch from the very start in a logical and sequential manner. | <ul style="list-style-type: none"> • Use as an introduction for a Code Club. | Free |
| <u>Code.Org</u> | Code.org® is a non-profit dedicated to expanding access to computer science. | <ul style="list-style-type: none"> • Try an hour of code. • Complete a computer science fundamentals course. | Free |

Intermediate

| Platform | Description | Resources, Activities and Ideas | Cost |
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| Probots | Ideal for learning more advanced coding. Paths can be drawn using the simple pen mechanism and a standard felt tip pen. The fully functional headlights use light sensors. | <ul style="list-style-type: none"> • Create a map on giant grid paper then program the Probot to travel through different destinations. Tell the story as the Probot travels through each place. • Build a miniature city or diorama using blocks, cardboard and other craft materials then program the Probot to move through the obstacles. • Program your Probot and use the pen feature to create shapes. Use other craft materials to add to your design. • Draw a giant maze on paper and program your Probot to escape. Draw on extra characters or extra obstacles to increase the difficulty of the challenge or create a story through the maze. | Mid-High |
| MAKEDO | MakeDo is a simple to use, open-ended system of tools for creative cardboard construction. Build imaginative and useful creations from recycled cardboard. | <ul style="list-style-type: none"> • Using cardboard and MAKEDO you can build a bridge, miniature cubby house, mini arcade, costume and anything else you can imagine! | Low- Mid |
| Stop Motion Studio | Create an animation; add sound effects, graphic effects, titles and credits with this free app. Available on iTunes and Google Play. | <ul style="list-style-type: none"> • Create a short animation using plasticine, Lego and other craft materials. | Free |
| Hopscotch | Make your own games and share them with the community using this free app. Available on iTunes. | <ul style="list-style-type: none"> • Learn how to code simple games. | Free |
| Makey Makey | Turn conductive objects into touchpads to control computer games and animations. | <ul style="list-style-type: none"> • Combine Scratch and Makey Makey to create an interactive Zine, storybook or mural. | Low |

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| | | <ul style="list-style-type: none"> • Combine Scratch and Makey Makey to create an interactive game. • For more ideas look here. | |
| DIY Makey Makey with Raspberry Pi | Build your own Makey Makey hat for a Raspberry Pi. | <ul style="list-style-type: none"> • Contact The Edge for plans and materials to make your own Makey Makey using Raspberry Pi. This option is cheaper than purchasing the two items together. | Low |
| Little Bits | LittleBits is an easy-to-use electronic building block kit. Components snap together to create inventions that blink, beep, buzz, crawl, communicate, and come alive before your eyes. | <ul style="list-style-type: none"> • Create LittleBits Creatures. • Create a miniature city then use LittleBits to power the city. • Create a miniature game arcade. • For more ideas click here. | Low-Mid |
| Scratch Pyonkee Snap Berkley | Program interactive stories, creative animations and games. Learn to solve problems and design projects. | <ul style="list-style-type: none"> • Code an animated story. • Code a game. • Set up a Code Club with training and free resources from Code Club Australia. | Free |
| Sphero SPRK Edition | Program Sphero using C-based visual block programming on a tablet. Trace a path for Sphero to follow. Apps available on iTunes and Google Play. | <ul style="list-style-type: none"> • Use block based programming to control your Sphero using Sphero SPRK • Use Sphero Draw N' Drive, a dark room and time-lapse on your camera to paint with light. • Use Sphero, a piece of tube and goals to play Tube Soccer. | Mid |
| MAKEIT | Download and use six sets of workshop activities, each focused on a different aspect of the science of light. | <ul style="list-style-type: none"> • Detailed plans for thirteen different things to make and do, including instructions, templates, explanations and materials suppliers. For more information contact The Edge | Low-Mid |

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| <u>Design Minds Kits</u> | Design Minds utilises design thinking to develop the capabilities of successful and creative 21st century citizens. Explore detailed plans for varied skill levels. | <ul style="list-style-type: none"> Detailed plans for varied skill levels in exploring design thinking and innovation. For more information contact the <u>Asia Pacific Design Library</u>. | Low-Mid |
| <u>Minecraft</u> | Minecraft is a game about placing blocks to build anything you can imagine. | <ul style="list-style-type: none"> Recreate a <u>significant site</u> using maps, images and other collection items. | Mid |
| <u>Adobe Voice</u> | Turn your story into an animated video. Available on iTunes. | <ul style="list-style-type: none"> Create a story using images and your voice. | Free |
| <u>Canva</u> | Graphic design made easy. | <ul style="list-style-type: none"> Create a poster for an exhibition or something of interest. | Free |
| GIF Creation | Capture images to create a short animation. Apps available on iTunes or Google Play. | <ul style="list-style-type: none"> Use <u>Giffer</u> or <u>Gif Camera</u> then upload to your preferred social media site. | Free |
| <u>mBot Robot</u> | mBot is an all-in-one solution for kids to enjoy the hands-on experience about programming, electronics, and robotics. | <ul style="list-style-type: none"> Build and program your mBot using <u>mBlock</u>. | Low |
| <u>MIT App Inventor</u> | App Inventor is a cloud-based tool, which means you can build apps right in your web browser. | <ul style="list-style-type: none"> Learn how to build your own apps. | Free |
| <u>3D Printing Pen</u> | Draw 3D designs and art. | <ul style="list-style-type: none"> Create your own character for a stop motion animation. Create a <u>candle holder</u>. | Mid |
| <u>iMovie</u> | Create and edit videos on iPad, iPhone or Mac. | <ul style="list-style-type: none"> Create a book trailer. Create a short film and explore narrative structure. | Low |

Advanced

| Platform | Description | Resources, Activities and Ideas | Cost |
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| Sparkfun PicoBoard | The PicoBoard allows you to create interactions with various sensors. Using the Scratch programming language, you can easily create simple interactive programs based on the input from sensors. | <ul style="list-style-type: none"> Combine the Picoboard and Scratch to create an interactive display. | Low- Mid |
| Raspberry Pi | The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. | <ul style="list-style-type: none"> For resources and to get started with Raspberry Pi click here. | Low |
| Python | Learn to program in Python, a powerful language used by sites like YouTube and Dropbox. | <ul style="list-style-type: none"> Visit Codecademy. | Free |
| Lego EV3 Kits | Create and command robots that walk, talk, think and do anything you can imagine. Follow the step-by-step 3D building instructions to create TRACK3R, R3PTAR, SPIK3R, EV3RSTORM and GRIPP3R and bring them to life with an easy, intuitive and icon-based programming interface. | <ul style="list-style-type: none"> Learn to program your robot then create a series of challenges/obstacles. | High |
| Arduino | An open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects. | <ul style="list-style-type: none"> Create a light following robot. | Mid-High |
| NAO | <p>Program incredible applications by creating sequences of predefined behaviour boxes or coding your own behaviours.</p> <p>Entirely designed and developed by Aldebaran, <i>Choregraphe</i> is the programming software that lets users of our robots create</p> | <ul style="list-style-type: none"> Create a choose your own adventure experience. | High |

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| | and edit movements and interactive behaviours easily. | <ul style="list-style-type: none"> • Create actions and dance to your favourite song. | |
| Sonic Pi | <p>A free live coding synth for everyone originally designed to support computing and music lessons within schools.</p> <p>Use code to compose and perform in classical and contemporary styles ranging from Canons to Dubstep.</p> | <ul style="list-style-type: none"> • Code live music. Run on a desktop or use Raspberry Pi. | Free |
| Blender | Blender is the free and open source 3D animation creator. | <ul style="list-style-type: none"> • Create a 3D animation. | Free |
| STEM in a Box | Resources and kits that explore complex electromechanical systems aimed at creating confidence in learners through tinkering and design engineering. | <ul style="list-style-type: none"> • Build a mobile robot. • Learn 3D printing. • Discover forces and motions. • Learn about mechatronics. | Mid-High |
| E-Textiles SparkFun Adafruit | Electronics designed for fabrics and textiles. Conductive thread and e-textile started kits. | <ul style="list-style-type: none"> • Create an LED E-Textile mask. • Create a plush monster. • Create an E-Textile Art Pin. | Low-Mid |
| 3D printing | Design custom 3D objects and print them instantly. | <ul style="list-style-type: none"> • Use Tinkercad to design printable objects. | High |
| Game Maker | GameMaker: Studio caters to all levels allowing users to create cross-platform games. | <ul style="list-style-type: none"> • Create a game. | Low-Mid |
| Unity 3D | Unity is a flexible and powerful development platform for creating multiplatform 3D and 2D games and interactive experiences. | <ul style="list-style-type: none"> • Create a 3D virtual world or treasure hunt. Use Oculus Rift to explore your world. | Mid-High |

Approximate cost per item key

Low = \$50-\$100

Mid = \$100- \$500

High= \$500+