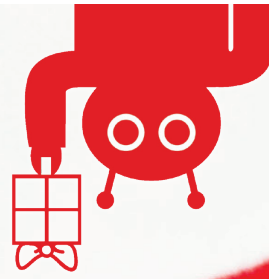# beanz

STEAM Gift Guide 2019

Sink your teeth into this!

https://beanzmag.com/steam-tools

This resource lists all kinds of STEAM tools for kids, organized by grade level.

STEAM Books

Super Cool Scientists Coloring Book

By Sara MacSorley This book highlights women working in fields ranging from marine biology to technology. **https://www.amazon.com/Super-Cool-Scientists-Sara-MacSorley/dp/1534662235/**

How Technology Works

By Dorling Kindersley Publishing This amazing book explains visually how almost every human technology works, **https://www.dk.com/us/book/9780241356289-how-technology-works/**
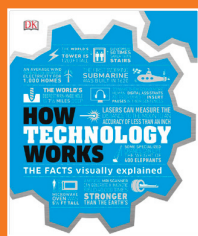
Great Barrier Thief

By Dr. Suzie Starfish This picture book for the younger crowd was written by an Australian marine scientist and artist. **https://drsuepillans.com/books/the-great-barrier-reef/**

Rosie Revere, Engineer

By Andrea Beaty Rosie loves making things. Her great-great-aunt Rose helps her keep going and become an incredible engineer. **https://www.amazon.com/Rosie-Revere-Engineer-Andrea-Beaty/dp/1419708457**

The Computer Science Activity Book

By Christine Liu and Tera Johnson 24 projects let you explore everything from circuits to neural networks, no computer required. **https://www.amazon.com/Computer-Science-Activity-Book-Paper/dp/1593279108**

Magic Tree House: Midnight on the Moon

By Mary Pope Osborne Number eight in this book series follows Jack and Annie on a trip through time and space. **https://www.magictreehouse.com/books/125151/midnight-on-the-moon**

Lift-the-Flap Computers and Coding

Learn how computers and programming work. Great for all ages! **https://usborne.com/browse-books/catalogue/product/1/9570/lift-the-flap-computers-and-coding/**

Ada Lace Series

By Emily Calandrelli Five books follow the marvelous Ada Lace, a third-grade scientist, powerhouse inventor, and awesome student. **https://www.simonandschuster.com/books/Ada-Lace-on-the-Case/Emily-Calandrelli/An-Ada-Lace-Adventure/9781481485982**

Scratch Coding Cards

While not technically a book, this set of 75 cards has a number of projects, from beginner to advanced, that teach all parts of Scratch. Ages 8+ **https://nostarch.com/scratchcards**

Robots

Robo Wunderkind

Botly For children as young as 5. Botley will have kids coding in minutes. 100% screen-free, the only coding robot that includes a 45-piece set! **https://www.learningresources.com/botleyr-the-coding-robot**

Little Robot Friends An easy way to get kids interested in coding and electronics. Each has their own personality. **https://littlerobotfriends.com/**

Sphero RVR RVR is drivable right out of the box, packed with a diverse suite of sensors, and built for customization. You can connect 3rd party hardware like Raspberry Pi, Arduino, micro:bit, and more. Available fall 2019. Check out Sphero Bolt, too. **https://www.sphero.com/rvr**

Robo Wunderkind This modular robot from Austria snaps together to make simple to complex robots, from a flashlight to a rolling vehicle that solves mazes. Includes free apps to program their robots. **https://robowunderkind.com/**

DJI RoboMaster S1 Includes 40+ components that lets you explore science, physics, artificial intelligence (AI), and more. **https://www.dji.com/robomaster-s1**

Dash and Dot Dash and Dot robots can be programmed with Blockly, a fairly easy language to master. Also check out their Cue robot! **https://www.makewonder.com/robots/dash/**   **https://www.makewonder.com/robots/cue/**

LEGO Mindstorms Take the LEGO idea—easy to snap together parts to build things—and add icon-based programming, wheels, legs, and other mobile pieces. Also includes an active online community with lots of ideas to try. **https://www.lego.com/en-us/mindstorms**

Cubetto Program the Cubetto robot with touch, pressing down block shapes in order to tell the robot what to do. Geared towards young kids. **https://www.primotoys.com/**

Code-a-Pillar Kids develop problem solving, planning, and critical thinking skills as they change the caterpillar's segments to make it go. **https://fisher-price.mattel.com/shop/en-us/fp/think-learn/think-learn-code-a-pillar-dkt39**

Ozobot Two small robots, Evo and Bit, provide a deceptive amount of learning opportunities, creativity, and fun.

Apps

Bitsbox Kids learn to code by making games on the *Bitsbox.com* website, and then play them on their phone or tablet. The games are quite clever with fun, bright graphics. And it's easy for kids to adapt the code once they figure out the game, while learning and becoming comfortable with code. A new box of games arrives each month. Ages 5+. **http://bitsbox.com**

Erase All Kittens!

A gentle introduction to professional coding languages, enabling children to play and learn on their own—or alongside parents and teachers. Mario-style gameplay for this online game to make learning these languages fun for complete beginners. Ages 8+. It's a blast to play (and learn!). **https://eraseallkittens.com/**

Codea Codea is an iPad app to create games. Adapt existing code or create from scratch. The app has lots of game functionality with few limits on what you can create. Ages 10+. **https://codea.io/**

Hopscotch This iPhone and iPad app uses blocks you drag and drop to create effects. It has a strong community of kids who often come up with creative ways to have fun. Ages 5+ **http://gethopscotch.com**

Tynker Many US kids are familiar with *Tynker* from their classrooms. *Tynker* is a block language, meaning you drag and drop blocks and configure them. It's easy and fun to move blocks around, find sprite images, and make the blocks do things. Ages 5+ **https://www.tynker.com/**

Move the Turtle Little kids can move a "turtle" around the screen by setting direction and the number of steps in order to create artwork and solve problems. Teaches basic coding ideas and prepares kids for block languages like *Scratch, Hopscotch,* and *Tynker*. **http://movetheturtle.com**

Coding Is Good, Swiftie, Touch Lua, Python 3.4 Learn how to code with *Swift (Swiftie), Lua (Touch Lua)*, and *Python (Python for iOS and Coding Is Good)*. **SoloLearn** has a number of apps and languages. Find them in the App Store and Google Play. Another option: find *Python* projects in books or online with the **Repl.it** website.

Run Marco! A coding adventure game in English and 26 other languages. Kids use conditional logic and critical thinking skills to help Marco get through his adventures. **https://allcancode.com/runmarco**

The Foos This iPhone and iPad app helps kids ages 5-10+ work through levels where they can play and learn basic programming and computer science skills. **https://thefoos.com/**

Hopscotch

Maker and Electronics Kits

KiwiCo Created by a team of educators, makers, engineers, and rocket scientists (yes, for real), they deliver monthly crates (kits) with projects geared towards humans ages 0 to 104. Their goal is to inspire kids interested in science, art, and making things. **https://www.kiwico.com/**

KiwiCo

Labo by Nintendo While not electronic, Labo is a game and construction toy created by Nintendo. If you have a Switch console, Labo lets you create all kinds of neat projects and things from cardboard and your console. **https://labo.nintendo.com/**

Adafruit Laboratories You can find all things electronics on their site, as well as tutorials and fun projects like blinking unicorn horns (who doesn't need those?). **https://www. adafruit.com/**

Piper Follow real engineering blueprints to build your own computer, and then use Pipercraft, a Minecraft mod, to configure it. You also can build gadgets with electronic boards. Includes wood case. **https:// playpiper.com/**

Kano This is a very simple snap together computer kit. The brains are powered by a Raspberry Pi and Kano includes an excellent operating system designed for kids. Also includes an online community to share ideas. **https://kano.me**

Jewelbots Create friendship bracelets with functionality kids can code. **http://jewelbots.com/ https://techwillsaveus.com**

LABO by Nintendo

littleBits Easy snap-together electronic pieces make a large number of different kits, and make it fun to invent things.
http://littlebits.cc/

Snap Circuits A collection of snap together circuit projects to teach kids the basics of electronics. Includes a kit with coding projects.
https://www.elenco.com/brand/snap-circuits/

Tech Will Save Us Educational tech toys that are kits kids can build to mix building, craft, science, tech, coding, and fun. Their Mover Kit is like a DIY Jewelbots.
https://techwillsaveus.com

Redfern They sell their Crumble board with robot kits with motors, LEDs, and sensors. All programmable with a Scratch-like drag and drop language. **https://redfernelectronics.co.uk/shop/**

Redfern Crumble Starter Kit

Secret Codes Kits and Books

Scientific Explorer Secret Codes Decoder Kit

This kit has fun tools such as invisible ink, while also containing info cards about some ciphers and codes, including Pigpen (which we covered in an earlier issue). **https://www.alexbrands.com/product/science-learning/science-learning-science-kits/fun-lab-secret-codes/**

Telegraph Kit: The Science Cube

We covered Morse Code in an earlier issue, so why not let the kids make their own machine? Definitely a cool gift idea for anyone who wants something physical to engineer.
https://www.amazon.com/Telegraph-Kit-The-Science-Cube/dp/B0082CRY7A

Cracking Codes with Python

This book combines two fun experiences: Python, which is easy to code, and secret codes. All kinds of ciphers are covered with details about how to use Python to break them. A fun, engrossing source book for someone interested in solving puzzles with code.
https://nostarch.com/crackingcodes

Top Secret: A Handbook of Codes, Ciphers, and Secret Writing

This takes a slight turn away from the 'fun kits', but it does cover a lot of the codes used throughout history, and gives some test codes to break.
https://www.publishersweekly.com/978-0-7636-0971-9

Secret Decoder Deluxe Activity Set: ON the GO

A little less focused on established codes, but has three workbooks which kids can delve into and crack the mystery as they go!
https://www.melissaanddoug.com/secret-decoder-deluxe-activity-set---on-the-go/5238.html

Scientific Explorer Secret Codes Decoder Kit

Secret Decoder Deluxe Activity Set

Board Games

Some of the best ways to learn about programming are through board and card games. You don't need electricity or a computer. Here are fun games for little kids, bigger kids, and families. Playing these games as a family with younger kids also can help them more quickly understand the games, more than if they were to play the games by themselves.

Robot Turtles

Robot Turtles is a great board game with an online community where you can create your own game boards. These games sometimes let you replace the object you direct with a favorite person, adding another level of fun and engagement.
http://thinkfun.com/robotturtles/

Turing Tumble

While not exactly a board game, it is a hands on game that uses the original idea of computers as switches to teach the basic ideas behind computing and programming.
https://www.turingtumble.com/

Robot Turtles Board Game

Code Master

Code Master

This single player game, from the makers of *Robot Turtles*, has 60 levels you work through to learn programming logic. Only one path leads to the crystal and wins the game.
http://thinkfun.com/codemaster

Bits and Bytes

This card game teaches basic computing skills: logic, problem solving, and critical thinking. The game is absorbing and flexible. No need for a computer.
http://bitsandbytes.cards/

littlecodr

This deceptively simple card game for kids 4-8 lets them lay out a series of steps for others to follow. When they master the basic game, they can add more advanced cards.
http://littlecodr.com/

Notable Women in Computing Card Deck

A traditional 52-card deck featuring women who have contributed to technology can be used to play any classic card game. The makers also offer cards with women from the Middle East and Africa, and posters for both sets. Download the poster and cards to print locally!
http://notabletechnicalwomen.org/

Giggle Chips

A set of creative game cards created by a mom and her young, doodling daughter that teach computer science concepts in a fun, visual way.
http://gigglechips.bigcartel.com/

Bits & Bytes

Virtual Reality

There are several ways to evaluate what virtual reality (VR) headset makes the most sense. If you only want to try out VR, for example, Google Cardboard and Labo VR are comparatively low cost. If you want the full immersive experience, and cost isn't a concern, then the issue to consider is wireless versus wired.

Google Cardboard

For $20-$30 USD you can buy a cardboard headset then slide in a modern smartphone and use VR apps. While not as immersive as the *HTC Vive*, the experience is as amazing as more expensive options. **https://vr.google.com/cardboard/**

Nintendo Labo VR Kit

If you have the Labo kit, which allows you to create all sorts of technology projects, there is a virtual reality kit that can extend the Labo system. It's more expensive than Google Cardboard but much less than the Oculus Go. The kit is a mix of DIY fun, pass-and-play multiplayer, and family-friendly play with simple, shareable VR gaming. Includes a programming tool to create VR games and experiences. **https://labo.nintendo.com/kits/vr-kit/**

Oculus Quest and Rift S

The Quest is an all-in-one gaming system built for virtual reality. Now you can play almost anywhere with just a VR headset and two controllers. You don't need a computer or wires. There's also a decent range of games to play. The Rift S is a new version that requires a powerful computer. **https://www.oculus.com/quest/   https://www.oculus.com/rift-s/**

Oculus Go

The Go is a basic version of the Quest, at a lower price, with similar features but optimized for more than games. There's one controller, not two. But you don't need a computer or wires. And the Go has the same or similar sound quality and lenses. **https://www.oculus.com/go/**

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HTC Vive

HTC Vive

While this is the most elaborate VR setup, the use of base stations to fix your position can provide more space to move around. You'll also need a powerful computer. At the least, definitely find a Microsoft store with an *HTC Vive* setup and then try it out. It's amazing! There's also the *HTC Vive Pro* which is expensive but includes high end equipment and features.
https://www.vive.com/us/

Playstation VR

The *Playstation* platform has added virtual reality to its games. You need a *Playstation 4,* but if yours is an older model or you don't have one and want to buy, the VR version of the platform could be lots of fun.
https://www.playstation.com/en-us/explore/playstation-vr/

Samsung Gear VR

Samsung Gear VR

A combination headset with smartphone, like the Google Cardboard, the Samsung Gear VR headset experience is more immersive. A controller also adds to the experience. **https://www.samsung.com/global/galaxy/gear-vr/**

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