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Art and Tech:
A Tsunami of Possibilities

In the Middle: What's Your Type?

Textiles and Textfiles

Coding With Pictures in Pyret

Inside!
The 2021 STEM/STEAM Gift Guide

October 2021 $6.00

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STEAM Gift Guide 2021

The Elf on the Shelf is on strike, so I'm taking over. I've got my eye on you!

Looking for a gift for someone interested in computing? Want to drop some hints about a gift YOU may want? You'll find lots of ideas inside, for kids of all ages and for all interests.
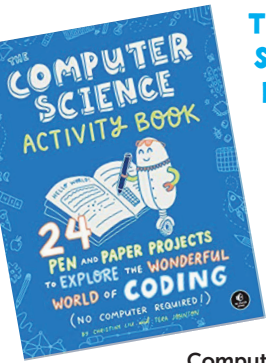
https://beanzmag.com/steam-tools

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

Pssssst....**beanz** makes a great gift too... just sayin'!

STEAM Books

The Computer Science Activity Book
By Christine Liu and Tera Johnson
Explore everything from circuits to neural networks, no computer required. https://www.amazon.com/Computer-Science-Activity-Book-Paper/dp/1593279108dp/1593279108

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/

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

Lift-the-Flap Computers and Coding
Learn how computers and programming work. Great for all ages! https://usborne.com/us/lift-the-flap-computers-and-coding-9780794535742
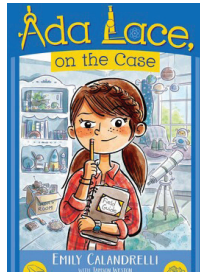
Ada Lace Series
By Emily Calandrelli Five books follow Ada Lace, a third-grade scientist and awesome student. https://www.simonandschuster.com/books/Ada-Lace-on-the-Case/Emily-Calandrelli/An-Ada-Lace-Adventure/9781481485982

Magic Tree House: Midnight on the Moon
By Mary Pope Osborne Number eight in this series follows Jack and Annie on a trip through time and space. https://www.magictreehouse.com/books/125151/midnight-on-the-moon
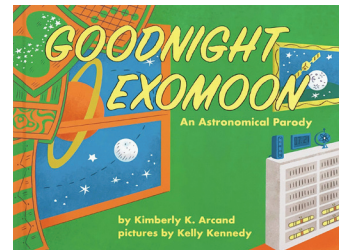
So You Want to Be a Coder?
What do they do all day? What skills do programmers use and need to know? https://www.simonandschuster.com/books/So-You-Want-to-Be-a-Coder/Jane-(J-M-)-Bedell/Be-What-You-Want/9781582705804
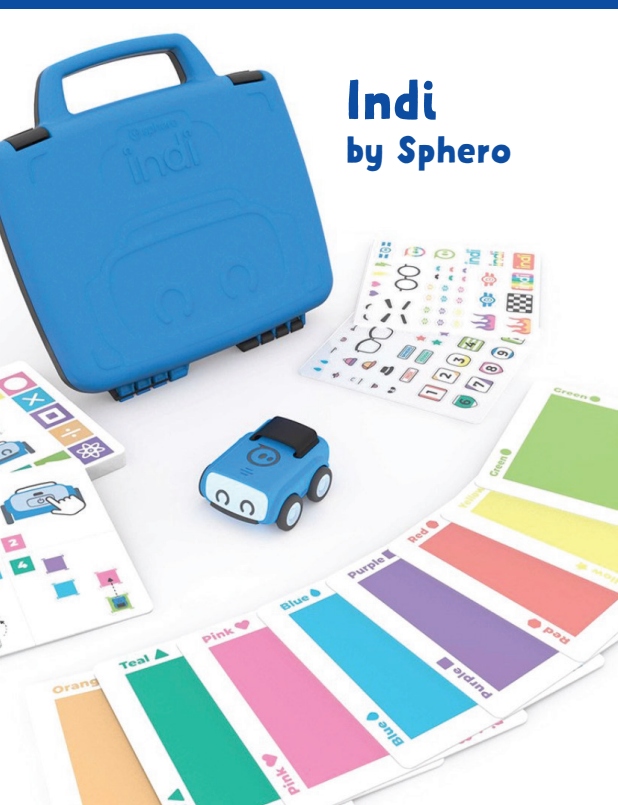
How Technology Works
By Dorling Kindersley Publishing This amazing book explains visually how almost every human technology works, https://www.dk.com/us/book/9781465479648-how-technology-works/

Goodnight Exomoon
This fun parody of the classic is written by molecular biologist and computer scientist Kim Arcand and introduces kids to astronomy concepts. For toddlers and younger kids.. https://www.smithsonianmag.com/smithsonian-institution/inspire-your-toddlers-stem-career-goodnight-moon-parody-180975520/

Robots

Indi by Sphero

Indi Designed for PreK to 2nd grade kids, this new Sphero robot teaches STEM skills without the need for a computer screen. Cards are used to direct the robot. https://sphero.com/pages/sphero-indi

Botly Botley will have kids as young as 5 coding in minutes. https://www.learningresources.com/botleyr-the-coding-robot

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

Sphero RVR RVR is drivable right out of the box and built for customization. Works with 3rd party hardware like Raspberry Pi, Arduino, micro:bit. Check out Sphero Bolt, too. https://www.sphero.com/rvr

Robo Wunderkind This modular robot from Austria snaps together to make simple or complex robots. https://robowunderkind.com/

DJI RoboMaster S1 Includes 40+ components that let you explore science, physics, AI, and more. https://www.dji.com/robomaster-s1

Dash and Dot For elementary school age kids. Also check out their Cue robot! https://www.makewonder.com/robots/dash/ https://www.makewonder.com/robots/cue/

LEGO Mindstorms Take the LEGO idea and add icon-based programming and other mobile pieces. https://www.lego.com/en-us/themes/mindstorms/about

Cubetto Program the Cubetto robot with touch. Geared towards young kids. https://www.primotoys.com/

**Code-a-Pillar** Change the caterpillar's segments to make it go. https://www.fisher-price.com/en-us/product/think-learn-code-a-pillar-twist-gfp25

Ozobot Two small robots, Evo and Bit, provide a deceptive amount of learning opportunities, creativity, and fun. https://ozobot.com/

Bitsbox

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+. **https://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. Ages 8+. **https://eraseallkittens.com/**

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

Hopscotch 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+ **https://www.gethopscotch.com/**

Tynker *Tynker* is a block language. Drag and drop blocks and configure them. Move blocks, find sprite images, and make the blocks do things. Ages 5+ **https://www.tynker.com/**

Move the Turtle Move a "turtle" around the screen 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 coding 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. Find *Python* projects on **Repl.it** website.

Run Marco! A coding adventure game in English and 26 other languages. Kids use conditional logic and critical thinking. **https://runmarco.allcancode.com/**

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://codespark.com/**

Hopscotch

Maker and Electronics Kits

Piper Follow real engineering blueprints to build your own computer then use Pipercraft, a Minecraft mod, to configure it. You also can build gadgets with electronic boards. Steve Wozniak, co-founder of Apple, apparently loves Piper. Includes wood case. **https://www.playpiper.com/**

Piper Make Starter Kit
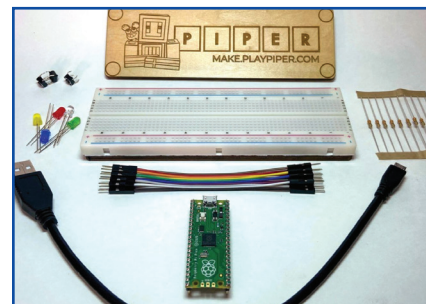
Labo by Nintendo A game and construction toy created by Nintendo. If you have a Switch console, Labo lets you create all kinds of neat projects. **https://labo.nintendo.com/**

Adafruit Laboratories You can find all things electronics on their site, as well as tutorials and fun projects. **https://www.adafruit.com/**

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

CrowPi The CrowPi is an amazing collection of electronic components with a Raspberry Pi computer, from ElecCrow. They also have starter kits for micro:bit and Arduino and a collection of regular electronic kits. **https://www.elecrow.com/**

Tech Will Save Us These tech toys are kits kids can build to mix building, craft, science, tech, coding, and fun. **https://www.techwillsaveus.com/**

littleBits Easy snap-together electronic pieces make a large number of different kits. **https://littlebits.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**

Kiwi Co Kits created by a team of educators, makers, engineers, and rocket scientists delivered monthly, with projects geared towards all ages. Each month a new STEM project arrives in the mail with materials, blueprints, and more ideas to learn and have fun. **https://www.kiwico.com/**

Snap Circuits Snap together circuit projects teach kids the basics of electronics. **https://www.elenco.com/brand/snap-circuits/**

Redfern Robot kits with motors, LEDs, and sensors. All programmable with a Scratch-like drag and drop language. **https://redfernelectronics.co.uk/shop/**

SAM Labs Their app-enabled electronic construction kits teach STEAM skills using Bluetooth-enabled blocks. **https://samlabs.com/**

Secret Codes Kits and Books

Top Secret: A Handbook of Codes, Ciphers, and Secret Writing
This takes a slight turn away from kits, but it does cover a lot of the codes used throughout history, and gives
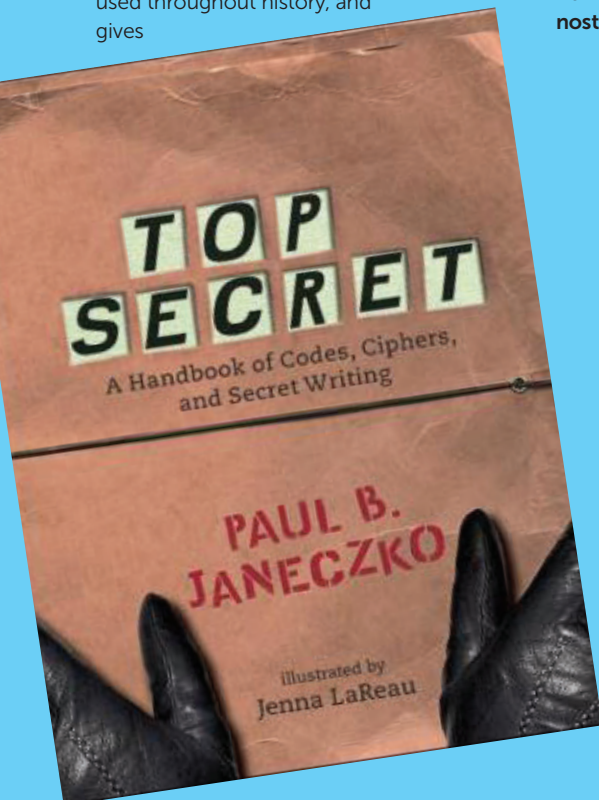
Cracking Codes with Python
This book combines two fun experiences: Python, and secret codes. All kinds of ciphers are covered with details about how to use Python to break them. **https://nostarch.com/crackingcodes**

Telegraph Kit: The Science Cube
Let the kids make their own machine. Definitely a cool gift idea for anyone who wants something physical to engineer. **https://us.amazon.com/Telegraph-Kit-The-Science-Cube/dp/B0082CRY7A**

Secret Decoder Deluxe Activity Set

some test codes to break. **https://www.barnesandnoble.com/w/top-secret-paul-b-janeczko/1100671619**

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**

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 can help younger kids understand them more quickly than if they were to play the games by themselves.

Robot Turtles

Robot Turtles is a great board game with some neat extensions like an online community where you can create your own game boards. These games sometimes let you replace the object you direct in the game with a person like your child, or a parent, adding another level of fun and engagement. **https://www.thinkfun.com/robot-turtles/**

Robot Turtles Board Game

Robot Turtles Board Game

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/**

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. **https://www.thinkfun.com/products/code-master/**

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/**

Scratch Coding Cards

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**

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. The Oculus Quest gets high ratings for wireless standalone headsets while the HTC Vive probably is the best wired option. Then again, if you have a Playstation 4, their VR headset is a good quality and benefits from all the games on that platform.

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, there is a VR 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. Includes a programming tool to create VR games and experiences. **https://labo.nintendo.com/kits/vr-kit/**

Oculus Quest The Quest is an all-in-one gaming system built for virtual reality. Now you can play wirelessly almost anywhere with just a VR headset and two controllers. The Quest scores very well in reviews by CNet and others. **https://www.oculus.com/quest/**

HTC Vive Cosmos 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. There's also the HTC Vive Pro and Focus which are expensive but include high end equipment and features. For the Cosmos headset, scroll down their Products page to see the three options. **https://www.vive.com/us/product/**

Sony 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/ps-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/**

Google Cardboard

Nintendo Labo

Google Cardboard

"A computer will do what you tell it to do, but that may be much different from what you had in mind."

–Joseph Weizenbaum

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art-and-computing

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Fractured Fairy Tales, Part 2
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Program With Pico and Thonny
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pico-board-get-started

Keywords in Programming
https://kidscodecs.com/
keywords

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