

AUTHENTICATED™
EDUCATIONAL PRODUCT ✓

BEST IN STEM

TOP TOYS AND GAMES

2020–2021



APPLYING STEM™
TO BETTER UNDERSTAND IT





TABLE OF CONTENTS

METHODOLOGY 2

TRUSTMARK 3

INTRODUCTION..... 3

THE RISE OF THE STEM TOY 4

INSIGHTS INTO THE ASCENT OF AN EMERGING INDUSTRY TREND 4

STEM TOYS CAN HELP ALL STUDENTS, BUT ARE ALL STEM TOYS HELPFUL?..... 4

WHAT TO LOOK FOR WHEN MAKING A SELECTION5

BEST IN STEM TOP TOYS AND GAMES 2020–2021..... 6

TOYS UNDER \$206

TOYS \$21.99 – \$29.9910

TOYS \$32.99 – \$49.9914

TOYS \$59.95 – \$69.9920

TOYS \$70.40 – \$99.9924

TOYS OVER \$10028

TOYS \$29.99 – \$49.99 + MONTHLY SUBSCRIPTION31

STEM TOYS INSPIRE THEIR WAY INTO POP CULTURE32

TOYMAKERS AND BRANDS LEND A HAND TO STEM EDUCATION32

STEM TOY V1.0..... 32

STEM TOY MARKET EVOLUTION33

THE REAL VALUE OF STEM TOYS34

A STEM DAY TO REMEMBER 35

METHODOLOGY

Compared to traditional toy award and product evaluation strategies with relatively high pay-to-play approval percentages (95%+), STEM.org Educational Research™ (SER) has taken into consideration 2,311 science, technology, engineering and mathematics [STEM-designated](#) products from Q1 2015 – Q3 2020, abiding by its own proprietary 100-point scoring rubric—considered by many of the top brands as the industry standard. Interested parties can submit their items regardless of financial status on an ongoing basis and trust that SER does not financially benefit from the sale of any product bought or sold. The organization has issued its authentication to 68.2% or 1,577 out of 2,311. The top 65 or 4% of those items authenticated (2.8% total) have made this year’s Newsweek Best In STEM list.

TRUSTMARK

The STEM.org Authenticated™ trustmark streamlines consumer’s ability to identify resources that conform to vetted standards, thus assisting with quick decision-making in favor of quality. When parents and educators identify such products, they can rest assured that each will:

- ✓ Integrate seamlessly into STEM-friendly homes and programs
- ✓ Align to Science, Technology, Engineering, and/or Math standards
- ✓ Support the development of student’s 21st Century Skills
- ✓ Engage students through hands-on learning and collaboration
- ✓ Ensure a secure, third-party review and evaluation process

STEM.org Educational Research™ takes into consideration the following criteria:

1STEM SUBJECTS

221ST CENTURY SKILLS

3SUPPORT MATERIALS

4DIVERSITY & INCLUSION

5SOCIALIZATION & COMMUNICATION

6IMAGINATION & COGNITION

7KINESTHETICS & ACTIVE PLAY

8STEM CAREERS

INTRODUCTION

Asked to imagine an inventor, most people probably picture a lone genius toiling in solitude: Einstein working out physics formulae or Edison in his patent office or Steve Jobs in his garage. But some of the most creative and dedicated inventors are surrounded by other hardworking—often unacknowledged, everyday people. They’re educators—a category that includes parents. They’re working to raise the next generation of scientists and engineers by providing new ways of learning.

Behind these parents and teachers is an army of tinkerers, toymakers and entrepreneurs who continue to innovate, providing fun ways for students of all ages to internalize the science, technology, engineering and math skills they will need. And with many of our children being schooled from home these days, it’s more important than ever for families to know which resources they can rely on.

We’re proud that STEM.org has partnered with Newsweek to highlight the toymakers and brands that help strengthen STEM education. We wish a prosperous and engaging time to all the innovators out there, large and small.

INSIGHTS INTO THE ASCENT OF AN EMERGING INDUSTRY TREND



Image: Getty / Young Woman Holding Up An AI Robot

While the subjects that comprise the acronym STEM aren't new, grouping these subjects of study—science, technology, engineering and mathematics—into a pedagogical approach didn't become a trend in educational circles in the early 2000s. Today, as the movement has gained momentum across the globe, more parents are taking action when faced with traditional curricula that don't offer their children the kind of content and pedagogy that will best prepare them for a career of innovation and problem-solving. Some families are advocating for better courses or enrolling their children in extracurricular STEM programs, while others have turned to the marketplace to find the answer they seek.

That's right: STEM toys. STEM toys have actually been around for several years now. As the New Yorker reported back in 2013, the industry was already welcoming an increase in STEM-related toys for almost a decade. According to data from a research firm on the toy industry, "Sales of building sets rose 22% from 2011 to 2012, from \$1.63 billion to \$1.99 billion; sales of scientific toys and educational toys, while a tiny fraction of overall toy sales, grew as well, by 17% and 25%, respectively."

STEM TOYS CAN HELP ALL STUDENTS, BUT ARE ALL STEM TOYS HELPFUL?

One trend that clearly stands out in the toy market: subscription services. Amazon's STEM Toy Club, which launched in 2017, is perhaps the most visible major company to offer such an option, but the e-commerce juggernaut is not the only retailer that's gotten involved with STEM toys. A recent piece in Retail Dive makes clear that several other large companies, including Walmart and Target, also offer STEM subscription services. The idea is simple: Parents pay a flat rate per month, and their children receive a different STEM toy or kit each month.

Subscriptions services are a great way to build curiosity and interest in STEM for kids who might not otherwise be interested. After all, who among us under age 12 would refuse a new toy in the mail each month? But as a product editor quoted in the RD article makes clear, it can be hard to tell if retailers are offering truly educational, engaging STEM toys or just trying to capitalize on the trend of STEM: "Amazon is actually late to the game," Jennifer Stein said. "STEM has become a fabulous term for marketers to use because parents buy into it, but it has been around. For it to be effective, it needs to be used correctly." One can assume that most seasoned STEM educators couldn't agree more.

WHAT TO LOOK FOR WHEN MAKING A SELECTION

So, how can parents—and educators—determine which of the new crop of STEM toys are actually beneficial and which are just getting in on the trend of STEM? Tech firm Technavio, which released a report forecasting the growth predicted in the STEM toy industry, breaks down educational toys into three categories: academic, cognitive thinking and motor skills.

Solid academic toys include math and science kits, as well as language learning toys, and these toys should actively engage children in skill acquisition or application. In other words, children should not be passive observers—a good academic toy should require them to think, interact with and/or manipulate concepts and ideas.

Cognitive thinking toys for younger children can include puzzles and construction sets that require children to think logically and apply reason. Cognitive skill-building toys for older students include classics like the Rubik's Cube, as well as more advanced construction sets from companies like LEGO, which require older students to apply concepts of both geometry and engineering.

Motor skill-building toys are a growing subset of STEM toys and primarily apply to the youngest of learners. Toddlers and preschoolers can benefit from workbench sets or even simple, well-designed building blocks, which allow young learners to develop the physical skills they need to move and manipulate objects.

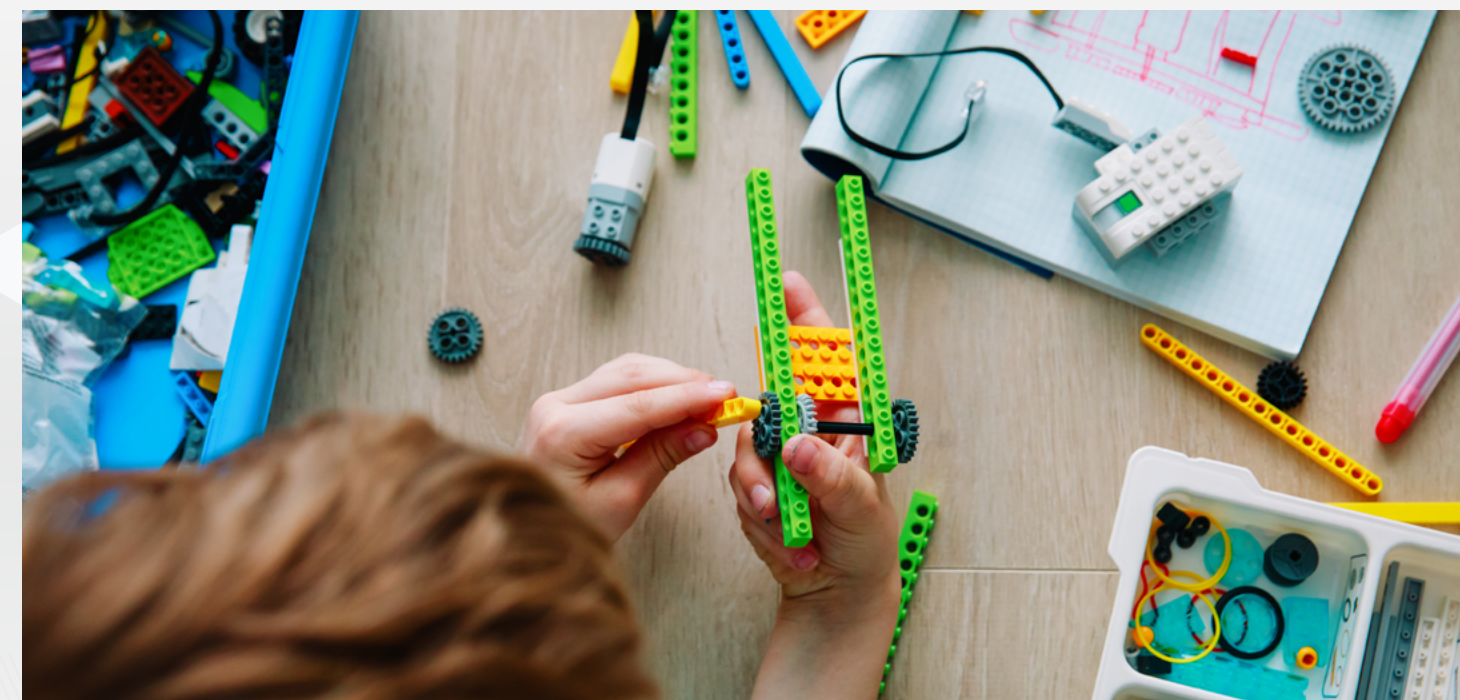


Image: Getty / Young Boy Playing with Construction Set

For parents who want to give their children additional opportunities to learn and practice STEM skills, quality STEM toys can be a great option. A growing market means that retailers are looking to capitalize on the opportunity, so it's important to do your research and look for toys that offer dynamic, hands-on learning as opposed to just encouraging students to pretend to "do science." While imagining a world in which they can grow up to be an engineer or a web designer is valuable, it's most important that children actually get real-world experience by engaging in problem-solving as opposed to playing with something fun that just makes them look the part. After all, hard work can definitely feel like play, especially in the STEM fields, so look for toys that offer that sweet spot of rigor and joy, and watch your child's interest in STEM take flight.

This article was originally featured in Forbes Community Voice™ on May 29th, 2018.

About the Author: Andrew B. Raupp is the founder and executive director at STEM.org Educational Research™ "Democratizing science, technology, engineering and math (STEM) education through sound policy & practice . . ."



BEST IN STEM

TOP TOYS AND GAMES

2020–2021

Great STEM toys spark imaginative, open-ended play while helping children develop skills related to science, technology, engineering, and math. STEM.org reviews hundreds of toys and games each year to help parents and educators provide a rich, engaging, and fun learning experience to children of all ages.

These are our picks for the top STEM toys of 2020–2021.

YEARS
6+

\$14⁹⁵
EACH



1500 Piece Mixed Color Series

Pix Brix

Pix Brix are interlocking bricks that can be used to create 2D designs or 3D sculptures. Sets come with a rainbow of squares for hands-on play that seamlessly blends art and engineering skills. There's also an app to pixelate favorite photos for personalized puzzles.

\$14⁹⁹
EACH

Moody Goat Terrarium Kit

Moody Goat, Inc.

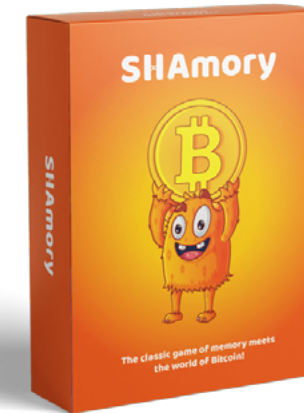
The Moody Goat Terrarium Kit comes with everything kids need to grow a miniature garden, including layers of sand and soil that promote healthy roots. The kit also has decorations and a nightlight to spark imaginative stories about this tiny DIY ecosystem.



YEARS
6+

YEARS
5+

\$14⁹⁹
EACH



SHAamory

SHAamory

Blockchain is one of the most critical technologies of the future, and SHAamory makes it easy to explain to kids and adults alike. This card game will have you Bitcoin mining and building blockchain in no time, and challenge cards step up the difficulty as kids learn the ropes.

YEARS
6+

\$17⁹⁹
EACH

Dissect-It

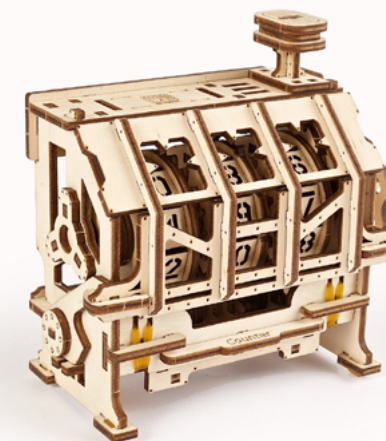
Top Secret Toys, LLC

Dissect-It allows kids to explore the skeleton and organs of a frog without harming any animals. A unique, refillable gelatin material can be sliced with plastic tools to reveal what's inside, creating a realistic dissection kit that's safe and engaging for very young learners.



YEARS
8+

\$19⁹⁰
EACH



STEM LAB Counter

UGears

The STEM Lab Counter provides double the fun. First, kids build a working mechanical click counter to understand the ancient mechanism behind common odometers. Then, kids can use their counter to measure any repeated action or object in household experiments.

Toys Under \$20





YEARS
10+

\$19⁹⁹
EACH

Merge Cube

Merge Labs, Inc.

The [Merge Cube](#) lets kids explore objects from dinosaur bones to spacecraft with their own hands. When you point your tablet at the Merge Cube, it transforms into one of thousands of objects that kids can engage with for a fascinating tactile learning experience.

Play 22 Toy Rocket Launcher

Home 4U

Soft foam rockets take to the sky when kids step—or jump!—on the air pump. The [Toy Rocket Launcher](#) is a great way to get even the youngest learners outside and experimenting with cause and effect as they send colorful rockets into the air.

\$19⁹⁹
EACH

YEARS
3+



MONTHS
0+

\$19⁹⁹
EACH

Stacks of Circles

Sassy Baby

Finding great educational toys for the littlest learners is always a challenge, but [Stacks of Circles](#) delivers. Bright rings can be stacked in any order to build early hand-eye coordination. As baby grows, rings can be counted and sorted by color, texture, weight, and pattern.

\$19⁹⁹
EACH

YEARS
6+

Stack By Numbers – Rocket

BrickMates

[Stack By Numbers](#) kits contain interlocking bricks that kids can use to build 3D puzzles. The template snaps under the clear baseplate to tell kids how high to stack bricks to complete the design. Free printables let kids make their own templates, too.



YEARS
3+

\$19⁹⁹
EACH

STEM Bolts & Nuts Building Set

Smart Wallaby

The colorful [STEM Bolts and Nuts Building Set](#) comes with a toy hex wrench that kids use to build anything they can imagine. Blocks, straps, and spinning wheels provide an engineering foundation as kids create their own toys and works of art.





YEARS
6+

\$21⁹⁹
EACH

Ant Farm Castle 2.0

NAVADeal

Ants are industrious, fascinating creatures, so they're perfect for budding biologists to study. The [Ant Farm Castle 2.0](#) uses an innovative blue gel instead of soil to provide a clearer look at your colony—and to provide nutrients to ants for a foolproof ecosystem.

YEARS
7+

\$24⁹⁵
EACH

Recycle Rally

Adventerra Games

Your kids know it's important to fill the recycling bin, but what happens after it's emptied? [Recycle Rally](#) is a fun board game that gets kids talking about trash, what happens to it, and how we can all work to make more eco-friendly choices.



\$21.99 – \$29.99

YEARS
7+

\$22⁵⁰
EACH

Bullseye Math Game 2nd Edition

JEM Games

Designed by a math teacher, [Bullseye](#) is deceptively simple: just roll the dice to create an equation that gets you to the designated answer. Endless combinations and easy play help kids internalize math facts while building strong mental math skills.



YEARS
4+

\$24⁹⁹
EACH

Butterfly Garden with Voucher

Insect Lore

Insect Lore has been providing kids with up-close-and-personal learning for decades. Their classic [Butterfly Garden](#) is a mesh enclosure for watching caterpillars change into beautiful butterflies—just turn in the voucher for the live insects when you're ready to begin.



YEARS
3+

\$24⁹⁰
EACH

Europa Kids Outdoor Explorer Kit

Europa, LLC

The [Outdoor Explorer Kit](#) has everything kids need for a backyard nature safari, including a butterfly net, specimen jar, binoculars, and more. This kit is perfect for bird watching, bug collecting, or imaginative play that encourages an exploration of your own ecosystem.



\$24⁹⁹
EACH

Light-up Crystal Growing Kit for Kids

Dan & Darci

Encourage young chemists to explore crystals with the [Light-Up Crystal Growing Kit](#). After mixing the crystal starter and growing three different colored crystals, kids can enjoy them as part of a nightlight set to study the crystals' unique details.

YEARS
8+



MONTHS
0+

\$24⁹⁹
EACH



48 Piece Beads And Accessories In Zipper Bag

Lalabloom

Large [Lalabloom Beads](#) stimulate babies and toddlers with different textures, shapes and colors. As children get older, they can enjoy stringing beads together, stacking them, and playing with them in the bath or at the beach. This multi-age toy grows with children through several stages of development.

YEARS
7+

\$29⁹⁹
EACH

Geomag - Mechanics - Magnetic Motion 86 Piece Building Set

Geomagworld SA

[Geomag Mechanics](#) combines magnetic Geomag balls and rods with mechanical pieces that allow kids to build a real moving machine. The set provides hands-on learning about the power of attraction and repulsion to build and then power their creations.



\$21.99 – \$29.99

YEARS
4+

\$29⁹⁵
EACH

AniBlock Puzzle Challenger III

AniBlock

Parents who remember Tetris will love [AniBlock Puzzle Challengers](#). Each set has puzzle blocks with different configurations of squares. Young children can place the pieces on the board any way they like, while older children will enjoy the challenge of creating specified designs with the accompanying app.



YEARS
5+

\$29⁹⁹
EACH

DoodleMatic / Pixicade Interactive Mobile Game Creating Starter Kit

Tink Digital, Inc.

What goes into designing a great video game? The [DoodleMatic Mobile Game Maker](#) lets kids turn original drawings into real mobile games they can play on an app. The included guidebook teaches kids the basic elements of game design for interactive fun.



YEARS
4+

\$29⁹⁹
EACH

Sweet Friends 74 Piece Set

Clicformers

Interlocking plastic squares click, bend and fold to create 3D creations in the [Clicformers Sweet Friends](#) set. After following directions to build the cute puppies in this set, kids can reconfigure the pieces to build anything they like with this clever construction toy.



\$29⁹⁹
EACH


Primo Kangaroo

Dolce Toys

This cuddly kangaroo is an ideal first toy for babies and toddlers. [The Primo Kangaroo](#) features shakers, squeakers, crinkles and even a separate baby joey to promote age-appropriate play. The soft toy is also designed for safe teething and tactile exploration.

MONTHS
0+





YEARS
5+

\$32⁹⁹

EACH

Human Body Educational Puzzle - 100 Pieces

Janod Toys

The [Human Body Educational Puzzle](#) is actually four puzzles in one: an anatomically correct boy, girl, skeleton, and internal organ cross-section. Kid-friendly artwork and the jumbo 39-inch size help youngsters connect new concepts to their own bodies.



YEARS
6+

\$39⁹⁵

EACH

Ooze Labs Chemistry Station

Thames & Kosmos

The [Ooze Labs Chemistry Station](#) comes complete with pipettes, test tubes, beakers and plenty of other tools that scientists use to conduct experiments. Non-hazardous chemicals and easy-to-read instructions make it fun to explore chemical reactions in real life.



YEARS
8+

\$34⁹⁵

EACH

Galton Board

Four Pines Publishing, Inc.

The [Galton Board](#) is a miniature lesson on probability and the bell curve. Just flip the board, and the beads fall into a standard distribution pattern. It's a great way to see that there's mathematical order in what seems like random chaos.



YEARS
8+

\$39⁹⁹

EACH

Moving Creations with K'nex

Hand2mind

Get young minds thinking about pneumatic and hydraulic power as they build their own machines with K'NEX components. [Moving Creations with K'NEX](#) comes with a notebook full of challenging builds and fun experiments that are perfect for budding engineers.



YEARS
6+

\$39⁹⁵

EACH

Motorized Ferris Wheel

Smartstoy

The wooden [Motorized Ferris Wheel](#) construction kit comes with a motor and all the tools you need to build a working model of an engineering marvel. This is a great project to promote the problem-solving and fine-motor skills used in construction.



YEARS
6+

\$39⁹⁹

EACH

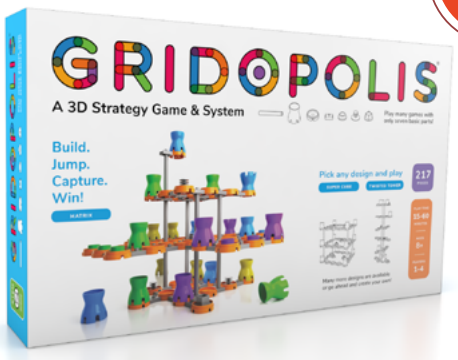
Pix Perfect Deluxe Pixel Art Kit

Pix Perfect, LLC

The [Pix Perfect Deluxe Pixel Art Kit](#) puts a crafty spin on math and geometry as kids create masterpieces on a grid. Sparkly sequins can be reused to create patterns, tessellations, and other pictures that can be displayed easily on the wall.

\$32.99 – \$49.99

YEARS
8+



\$39⁹⁹
EACH

Gridopolis

Gridopolis Games, LLC

Gridopolis is a 3D checkers game that you build as you play, combining engineering, geometry, and strategy into one dynamic activity. The game is never the same twice, so it grows with kids' skills for years of fun.

YEARS
4+

\$40⁰⁰
EACH

DISCOVER

Makedo

Makers everywhere love building models out of cardboard to get their ideas out in the world. The Makedo DISCOVER kit is the ultimate toolbox for cardboard construction and includes safety saws, a perforator wheel, and plastic screw connectors and screwdrivers to build 3D creations.



YEARS
14+

\$39⁹⁹
EACH

STEM Epic Heroes Collector's Edition

Mythic Lab

Teens will love the strategy of this competitive card game. STEM Epic Heroes has players using famous scientists in a race to make discoveries and collect more cards. This special collector's edition features additional scientists and special foil cards not available elsewhere.



YEARS
8+

\$43⁹⁹
EACH

Circuit Blox 120 - E-Blox Circuit Board Building Blocks Toys for Kids

E-Blox, Inc.

This battery-powered circuit board lets kids use interlocking bricks to create working lights, alarms, motors and more. A variety of specialty bricks work to power inventions that gradually grow more complex—including an FM radio receiver. E-Blox are also compatible with other interlocking bricks.



YEARS
5+

\$39⁹⁹
EACH

Pulley 77 Piece Set

Brackitz

Hands-on building is made easy for small hands with the Brackitz Pulley 77 Piece Set. Standard rods and connectors combine with cranks, pulleys and cables to create fun contraptions like cranes, zip lines, and a drawbridge—or whatever your child can imagine.



\$46⁹⁹
EACH

Helio Base LED Projector

Helio Productions, Inc.

Helio is an award-winning nightlight that serves as a projector in your child's room. Interchangeable discs project everything from math facts to images of the solar system onto bedroom walls to reinforce important STEM concepts in a beautiful, relaxing way.

YEARS
2+

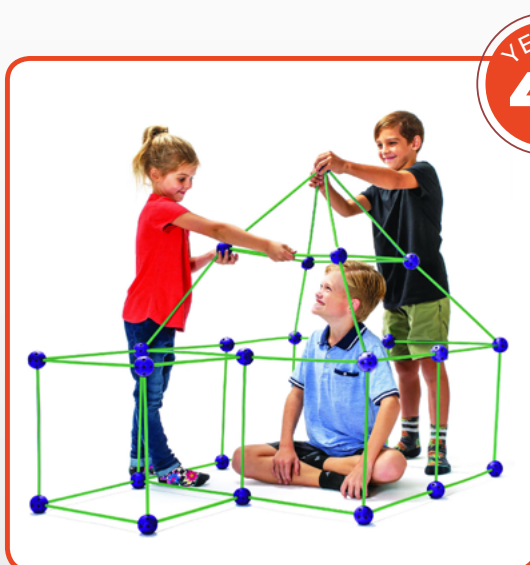


- INCLUDES THE FOLLOWING**
- 1 HELIO BASE NIGHT LIGHT PROJECTOR
 - 5 HELIO EDUCATIONAL STARTER DISCS
 - 1 HELIO LONG LASTING LITHIUM BATTERY
 - 1 HELIO UNIVERSAL POWER ADAPTOR



COSTA MESA, CALIFORNIA - WWW.HELIOSITE.COM
HELIO PRODUCTIONS INC. IS LOCATED IN THE UNITED STATES OF AMERICA





YEARS
4+

\$49⁹⁹
EACH

Fun Forts Glow in the Dark 81 Piece Building Set

Power Your Fun

Extra-large rods and spheres form a life-size building set that kids can use to frame a play fort indoors or out. Rods glow in the dark so the frame remains visible, even under blankets. [Fun Forts Glow in the Dark](#) is perfect for small hands and big imaginations.

\$32.99 – \$49.99

\$49⁹⁹
EACH

YEARS
12+

The Entrepreneur Game by EESpeaks

DM Media, Inc.

This board game walks players through everything it takes to run a successful business. In addition to math and money skills, [The Entrepreneur Game](#) sparks kids' imaginations about starting their own businesses—a crucial skill for future makers and inventors.



SHAPE THE FUTURE OF
STEM • STEAM product standards
by becoming a member today!

LEARN MORE AT STEM.ORG





YEARS
8+

\$59⁹⁵
EACH

Rubik's Connected Cube

Rubik's Brand, Ltd.

The [Rubik's Connected Cube](#) brings the classic puzzle into the twenty-first century with internet connectivity. Kids can use a mobile app to learn to solve the puzzle, then build their speed skills to battle other players online.



YEARS
14+

\$59⁹⁹
EACH

U-505

The Atom Brick, Inc.

The Atom Brick is three-quarters the size of a standard interlocking brick, so it's ideal for teens taking their skills to the next level with more detailed builds. The [U-505](#) is a scale model of German U-boats—perfect for STEM and history lovers alike.



YEARS
6+

\$59⁹⁹
EACH

Circuit Explorer Deluxe Base Station

Educational Insights

The [Circuit Explorer Deluxe Base Station](#) lets future astronauts build a space station with lights, battery powered rovers, and a voice synthesizer. Learning is twofold as kids learn about construction and circuitry to make the imaginative gadgets turn on and off.



YEARS
6+

\$59⁹⁹
EACH

3Doodler Start “Learn from Home” Pen Set

3Doodler

No 3D printer? No problem! [3Doodler](#) has invented a handheld 3D printing pen that lets kids draw their creations. Extruded plastic is cool to the touch, BPA-free, and compostable, allowing kids hours of free-form design time to bring their ideas to life.



YEARS
6+

\$59⁹⁹
EACH

Gujo Destination Mars Rocket

Lukilab

The [Gujo Rocket](#) lets kids connect detailed panels with plastic pieces to get kids building. Follow the directions to build a rocket, then recombine pieces to design other vehicles. Once the rocket is complete, kids can act out their own space adventures with the included astronaut.



YEARS
6+

\$64⁹⁹
EACH

Lux Blox STEAM Inventor with Accessories Rainbow Set

LUX BLOX

Lux Blox plastic squares are deceptively simple but can be clicked together in thousands of way to make 3D creations. The [STEAM Inventor set](#) comes with wheels, axles, and rubber bands for building vehicles, machines, and even a friendly dog.



20



Applying STEM To Better Understand it™

Copyright © 2001–2021 STEM.org | Educational Research™ All Rights Reserved.



BACK TO TABLE OF CONTENTS

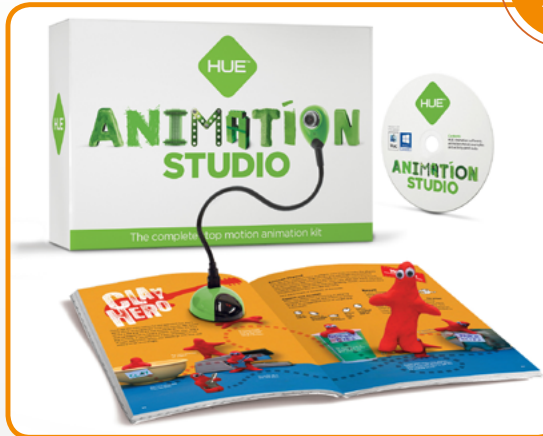


STEM

EDUCATIONAL RESEARCH

21

YEARS
7+



\$69⁹⁵
EACH

HUE Animation Studio

HUE

HUE Animation software was invented by teachers to provide an easy-to-use system for creating stop-motion animation. The simple interface works on most operating systems and will have kids creating animated movies, time-lapse videos, and special effects in no time.

YEARS
8+



\$69⁹⁵
EACH

Turing Tumble

Turing Tumble, LLC

Named for mathematician Alan Turing, the Turing Tumble teaches coding concepts with analog switches, interceptors and gears. Kids follow an engaging graphic novel with puzzles that they build a machine to solve. Simple initial problems evolve into challenges that even adults will love.

YEARS
3+

\$69⁹⁹
EACH

Tileblox Rainbow 20 Piece

Tileblox

Young builders will love how easily magnetic Tileblox snap together. This set of 20 square and triangle tiles comes in a rainbow of hues that let children build strong spatial skills as they create colorful 2D and 3D projects.



YEARS
5+

\$69⁹⁹
EACH

Toaster Pets Cartoons Studio Kit

Toaster Party, Inc.

Toaster Pets Cartoon Studio Kit lets kids create animated cartoons with a simple app. The kit comes with 10 plastic characters that kids can manipulate, film, and import onto a range of backgrounds to their story. AI helps characters mimic kids' mouth movements for realistic dialogue and reactions.



YEARS
5+

\$69⁹⁹
EACH

Chain Reaction

Smartivity

Smartivity's Chain Reaction game is a fun way for kids to discover cause and effect in kinetics. Wooden modules can be set up to trigger a chain reaction that launches a marble to play skee ball, bowling, or a knock-down game for hours of fun.





YEARS
8+

\$70⁴⁰
EACH

MyHome

Elenco Electronics

Budding electrical engineers will love designing a working electrical system with the [MyHome](#) building kit. After using the base plates to construct a house or high-rise, kids add circuits, switches, doorbells, a security system, and more to power their creations.

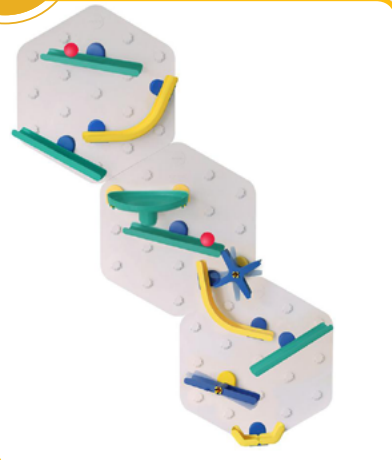
\$79⁹⁹
EACH

Crayon Edition: Triple Fun Set of 3 – VertiPlay STEM Marble Run

Oribel Pte, Ltd.

This modular peel-and-stick [Marble Run](#) hangs on the wall and supports a collection of levers and tracks that kids combine to guide the marble to its final destination. Hands-on experimentation leads to a deeper understanding of the laws of physics.

YEARS
5+



YEARS
6+

\$83⁹⁹
EACH

Arcade Coder

Tech Will Save Us

[Arcade Coder](#) works with your iPad to teach kids all about coding and game design. After learning to play classic arcade games, they can then change the games, design their own characters, and code a whole new game. Learning to code is fun every step of the way.



\$84⁹⁹
EACH

Botley 2.0

Learning Resources

[Botley 2.0](#) teaches young kids to code—without the excess screen time. This 78-piece kit includes everything needed to teach Botley to solve a maze, run an obstacle course, and more. Lights, sounds, and a few “hidden” features make Botley an engaging companion.

YEARS
5+



YEARS
3+

\$99⁹⁹
EACH

Magformers Backyard Adventure 61 Piece

Magformers

The [Magformers Backyard Adventure Set](#) includes 61 magnetic tiles and shapes that stick together to create 3D builds. Magnetic pieces always attract rather than repel, so the set is ideal for small hands. Extra pieces help children create a backyard swing set to encourage young imaginations.



\$99⁹⁹
EACH

BAKOBAPioneer

BAKOBAPioneer

Soft, machine-washable foam BAKOBAPioneer blocks are large enough for small hands to manipulate easily for creative building projects. The [BAKOBAPioneer kit](#) includes wheels, eyes, and connectors that allow BAKOBAPioneer to connect to LEGO bricks to expand construction possibilities.

YEARS
3+



\$70.40 – \$99.99



GET YOUR PRODUCTS
STEM.org Authenticated™
 JOIN THE ALLIANCE!

YEARS
3+



\$99⁹⁵
 EACH

STEM Blocks 50 Piece Kit

Kontu

Magnetic **Kontu STEM Blocks** are a tactile delight for early learners as they explore counting, magnetism, building, and more. Sustainably made wooden blocks can be stacked and manipulated to solve the included puzzle cards or used in free-form imaginative play.

\$70.40 – \$99.99

YEARS
5+



\$99⁹⁹
 EACH

Oregon Scientific SG268R Smart Globe Adventure AR

Oregon Scientific

The **Oregon Scientific Smart Globe** lets students explore the world to learn about geography, science and social studies in an interactive way. Just touch the smart pen to the globe to learn about 25 different topics. The globe connects to your tablet for engaging learning games, too.



\$119⁹⁹
EACH

STEM Jr.™ Wonder Lab™

MGA Entertainment, Inc.

The [STEM Jr. Wonder Lab](#) lets toddlers pretend to be scientists with a play laboratory set. This sturdy Little Tykes play set include plenty of age-appropriate tactile stimulation and over 40 hands-on experiments to conduct with accessories that include kid-friendly plastic test tubes, an eyedropper, goggles, and more.

YEARS
2+



YEARS
6+

\$129⁹⁹
EACH

STEM@Home Kits 5-pack

Science Explorers

The [STEM@Home Kit](#) comes with five hands-on science lessons and the materials needed to experiment with super string slime, air pressure, an owl pellet, and more. Each activity comes with detailed instructions for loads of hands-on science fun.



\$139⁰⁰
EACH

Cubelets Discovery Set

Modular Robotics

What happens when you add a tiny computer to a set of building blocks? You get the [Cubelets Discovery Set](#). Each block has its own function, so kids can experiment with coding cause and effect to build a range of miniature robots.

YEARS
4+



YEARS
8+

\$139⁹⁹
EACH

Mini Unit Beams Bridges

Unit Bricks

Take block play to the next level with the [Mini Unit Beams Bridges Builder Set](#). Solid hardwood Unit Bricks come with large beams and other specialty pieces made for building suspension bridges. Budding engineers learn by doing as they experiment with bridge design.



\$159⁹⁹
EACH

ThinkPlay Gears Extreme

ThinkPlay, Ltd. / Morphon

Explore the basics of physics with [ThinkPlay Gears Extreme](#), a building set of colorful plastic gears, chains and pulleys. Kids learn how gears work together to create friction, power, and motion as they build their own clocks and working machines.

YEARS
5+



Toys Over \$100



YEARS
10+

\$224⁹⁵
EACH

Jade Robot

Mimetics, Inc.

The [Jade Robot](#) is packed with features—all of which are visible on its unique exterior circuit board. There are light and object sensors, a spectrometer, and a line-following sensor. Kids can use the mobile app to program Jade to perform a wide range of tasks.

Toys Over \$100

\$29⁹⁹–\$49⁹⁹
EACH

Bluetooth Speaker

Creation Crate

The Creation Crate Bluetooth Speaker is a project kit that includes everything teens need to build their own Bluetooth speaker to connect to a smartphone. A complete course online course teaches all about sound and wireless technology while providing step-by-step building instructions.

YEARS
12+



\$249⁹⁹
EACH

Piper Computer Kit

Piper, Inc.

The [Piper Computer Kit's](#) laser-cut wooden pieces and a full slate of electronics allow kids to build their own working computer. Young computer engineers can build, dismantle, and rebuild the computer several times to understand the hardware, then enjoy 11 different coding projects with Raspberry Pi.

YEARS
8+



YEARS
6+

\$299⁰⁰
EACH

Kano PC

Kano

[Kano PC](#) is the perfect first computer for kids. Durable parts click in and out so kids can build their own machine, then learn to use basic programming and Windows computer apps with the included kid-friendly software. Webcam and accessories are also available.



YEARS
2+

\$49⁵⁰+\$17⁹⁵
EACH PER MONTH

Square Panda Literacy System

Square Panda, Inc.

The [Square Panda Literacy System](#) helps kids build reading readiness skills and confidence. Sets of print books and flashcards work seamlessly with online books and SwipePhonics technology to promote independence. Square Panda makes learning phonics both engaging and effective.



TOYMAKERS AND BRANDS LEND A HAND TO STEM EDUCATION



Image: Getty / Boys Playing With A STEM Toy

If you were to close your eyes and imagine an inventor, what would you picture?

For most people, the image of a lone genius toiling away in solitude is a strong one. From Einstein figuring out physics formulas, to Edison in his patent office and Steve Jobs in his garage, many of our greatest thinkers needed lots of time and a space to work out their ideas before stunning the rest of the world with their innovations.

But some of the world's greatest minds aren't just determined to make something new. Instead, they strive to find ways to pass novel ideas on to others. These inventors are also educators, solving the problem of how to raise the next generation of scientists and engineers by providing new ways of learning. They are the tinkerers, toymakers, and entrepreneurs who continue to innovate, providing fun ways for students of all ages to internalize the science, technology, engineering, and math (STEM) skills that they will need to solve the problems of tomorrow.

STEM TOY V1.0

In 1974, a professor of architecture was obsessed with finding a way to help his students understand and solve problems in three dimensions. This is, after all, the work of architects and engineers. However, back then traditional schooling too often favored—and still tends to lean towards two-dimensional thinking, rote memorization and pen-and-paper problem solving.

To give his students a concrete way to visualize and manipulate 3D problems kinesthetically, the professor spent nearly all of his free time assembling blocks of wood and paper, searching for ways to connect them that would let architectural students twist and turn the shapes to understand how they interacted with each other in space. The result of all of that tinkering was what the inventor ended up calling a “Magic Cube.”

Today, we all know this as a Rubik's Cube, one of the most popular puzzle toys ever made—and over 450 million sold to prove it.

Hungarian inventor Ernő Rubik himself wasn't sure exactly how to solve the puzzle he had created at first, and no wonder. Mathematicians have calculated that the Rubik's Cube has over 43 quintillion move combinations, and is the ideal tool for exploring the concept of group theory. Rubik, having limited experience with his newly-created twisty puzzle, took a month to solve it on his own. But this is fitting for the prototypical STEM toy: its maker passionately believes in the power of self-teaching and often “bristles at the idea that those in authority are in the best position to impart knowledge.”

And that is the idea behind all the best STEM toys: learners will do whatever it takes to explore a task, apply new skills, and hone effective ways of thinking to solve a problem—provided that it is presented in an inherently fun and engaging way.



Image: Shutterstock / Solving An Early Puzzle Cube

STEM TOY MARKET EVOLUTION

The late 1960s and early 70s welcomed notable rumblings of the now-booming STEM toy industry, although the official acronym wouldn't be coined until the 1990s or brought into wide use until the twenty-first century. In addition to the Rubik's Cube, Carlos White's Insect Lore was an early pioneer in this space, creating a product that shipped caterpillars to children so they could see the process of metamorphosis with their own eyes and then release a butterfly into the wild. Lego USA began operations in 1972, leading to a huge demand for the interlocking brick, which is still a staple of makerspaces and playrooms around the world. Meanwhile, in the suburbs of Chicago, Gil Cecchin and Arthur F. Seymour along with their wives Carol and Maryann began building, distributing and marketing a product to help television repairmen and Elenco Electronics, Inc. was born. It now serves the world with its innovative toys, gadgets and bestselling educational products. Arthur has since left Elenco and has gone on to start a separate STEM toy brand named E-Blox, Inc.—both remain family owned and operated companies.

As academic leaders began to develop curriculum to better prepare students for the important science and technology careers that would drive the economy of the new century, toymakers wittingly stepped up their game.



STEM TOYS INSPIRE THEIR WAY INTO POP CULTURE CONTINUED...

Large companies like Fisher-Price followed suit. It partnered with Compaq to make more realistic electronic toys in the mid-1990s, and by the 2010s they were making toys designed to teach programming and coding skills to kids as young as age three.

Today, thanks to innovative manufacturers as well as “edupreneurs,” individual inventors, and toy companies of all sizes, the global market for STEM toys is expected to grow by nearly \$474 million through the year 2024. Though STEM toys are just a small splice of the overall toy market, it’s no doubt one of the fastest-growing segments.

One can now find STEM-themed toys online and in their own aisles at Target, stuffed end caps at office supply stores like Staples and even center displays at some of the most unlikely of places—Michaels which is known mostly for its art supplies. With major retailers firmly on board, STEM toys are as much a part of childhood today as Slinkys and hula hoops were in decades past.



Image: Getty / Girls Experimenting In The Laboratory

THE REAL VALUE OF STEM TOYS

The best STEM toys support learning and help encourage critical thinking. They instill a love for design and exploration. But creative toymakers are often the overlooked, unsung heroes of the STEM movement. These passionate inventors and designers took the dream of educators and brought it into the public consciousness in a way that traditional pedagogy could never achieve. STEM toys are the keystone in the arch that bridges the gap between school and home.

And this connection is crucial. Researchers have long known that strong school-home connections reinforce lessons and democratize learning by turning the whole world into a classroom where students become self-motivated learners. Best practices encourage teachers to develop projects and activities that involve parents and draw connections between schoolwork and real life. These connections strengthen community and support deeper, more critical thinking.

Such skills are key when facilitating solid STEM learning outcomes, and toymakers leapt to the task of filling the gap. In doing so, they created real positive buzz around STEM learning in general. Witnessing firsthand often incredibly dry concepts brought to life with colorful toys, some parents found it much easier to accept the movement. As toy shelves began to fill with an assortment of products donning beautiful packaging marked “STEM”, it tangibly began to deliver a somewhat abstract and intimidating concept into the mainstream. Parents were now free to embrace the idea that play could be more valuable and that they could support their child’s learning on their own, not just in the classroom.

This was the final piece of the puzzle that took STEM from an educational buzzword—one that could have easily gone the way of so many pedagogical fads—and turned it into a powerful movement that has captured the imagination and attention of dueling politicians, school boards, creative teachers, and fun-loving families alike. Toymakers managed to do what even the most civic-minded educational leaders could not: they made STEM accessible for all stakeholders.

A STEM DAY TO REMEMBER

For a perfect example of the influence that toy companies have on the overall [STEM Education] movement, one needs look no further than National STEM Day. Celebrated across the country on November 8th, STEM Day is meant to shine a spotlight on the importance of strong STEM education for today’s youth. Many schools celebrate with fun STEM activities, and even NASA has recommendations on making the day both inspirational and educational.

But do you know why STEM Day lands on November 8th? It’s not because a group of university professors or government officials decreed it. It’s because MGA Entertainment, one of the world’s largest privately held toy companies, did the work to establish the day to support STEM while promoting their Project Mc2 Franchise of dolls, apps, and entertainment. In the Project Mc2 world, a group of smart girls work in a secret organization called NOV8 (pronounced “innovate”). The Nov. 8 date for National STEM Day in America was created as a result.

Although #NOV8 may have initially appeared like a brand promotional strategy, it—like so many STEM toys, games and puzzles—has enriched everyone’s connection to the movement as a whole. And for this, we all owe a debt of gratitude to toymakers and their associated brands large and small. Their creativity is leading to a bright future for young people everywhere.

STEM education is teaching and learning in science, technology, engineering and math. It includes both pedagogical and andragogical activities across all developmental levels—from pre-school to post-doctorate—in both formal and informal settings, which has grown into an international movement to serve the greater good.

Editor’s Note: The Newsweek Best In STEM Top Toys and Games list for 2020–2021 powered by: STEM.org Educational Research™ is one of the few **unsolicited roundups where brands do not pay to be listed**. In addition, both the evaluating organization and the publisher have abstained from paid affiliate partnerships associated with this program. Readers can have confidence that all of the items selected are based solely on product merit versus the size of each organization’s marketing budget or industry influence.

—Andrew B. Raupp is the founder and executive director at STEM.org Educational Research™



AUTHENTICATED™
EDUCATIONAL PRODUCT ✓

BEST in **STEM**

**Top Toys and Games
2020–2021**

www.STEM.org

Follow & Share @stemdotorg



STEM.ORG
EDUCATIONAL RESEARCH