

Working today to prepare  
kids for the technology of  
tomorrow.



**CODING  
BUTTERFLY**

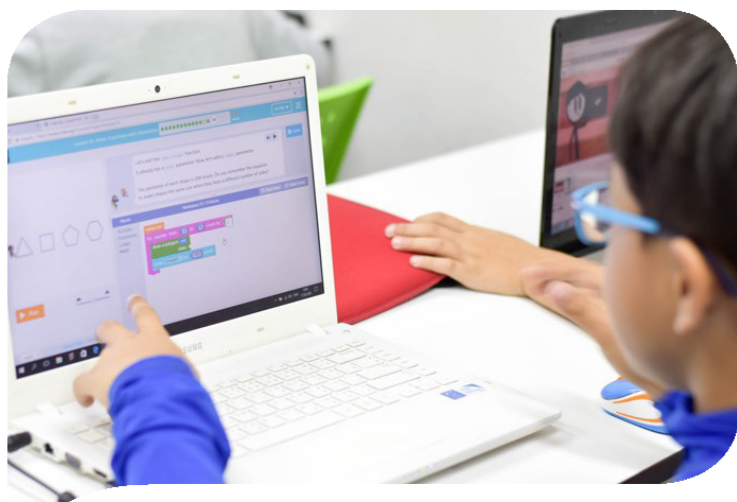
## Coding Programs for Kids that Make Learning Fun!

These days, when it comes to K-12 digital education, complicated computer programming language is a thing of the past!

Programs developed by MIT and Google are making it possible for kids to begin programming at a very early age. These programs draw on languages like Java and Python, but they function as drag and drop building blocks rather than are not only familiar to kids, but also make it easy to quickly teach kids the basics of coding.

**Scratch**, a program developed and maintained at the MIT Media Lab, is both a programming language and an online community where children can program and share interactive media such as stories, games, and animation with people from all over the world. With Scratch, kids can work independently or in groups to...

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# THE RISE OF THE MACHINE:

## Robotics Takes Hands-on Learning in a Whole New Direction

Robotics is taking K-12 students by storm! This hands-on creative building process combines the engaging process of creating machines by hand with the technological skills commonly associated with coding and programming.

Companies such as LEGO® have developed a wide range of learning tools for every age, and are sponsoring FIRST LEGO® competitions across the country. Students work together in teams to build robotic solutions for real world problems and then test their creations against competitors.

LEGO® educational products include: MINDSTORM (K-12 classroom engagement kits), STEAM Park (for preschoolers), and MAKER (grade-specific lessons plans that give teachers a new way to introduce technology into the classroom).

Robots like the Ozobot give kids a new way to learn to code by letting them program and reprogram Evo and Bit, the loveable little bots that can learn just about anything.

In addition, Google and Ozobot have joined forces to create a programming language based on Google's Blockly language. OzoBlockly provides kids with a quick way to begin using the drag and drop method.

Now kids can begin learning the skills they'll need for careers in the 21st century at any age!

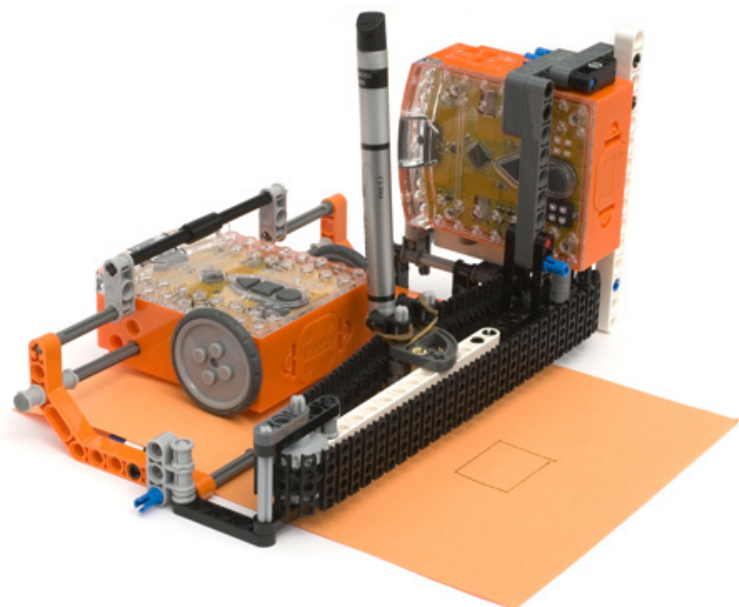
## ROBOTICS COMPETITIONS

### BEST

Crossfire Competition: A robotics competition designed to increase the opportunities for traditionally neglected groups (urban/rural students, female and minority students) and increase the number of STEM-focused graduates.

### EARLY

Robotics: EARLY provides 7 to 12-year-olds with the opportunity to participate in a robotics competition every fall and spring.

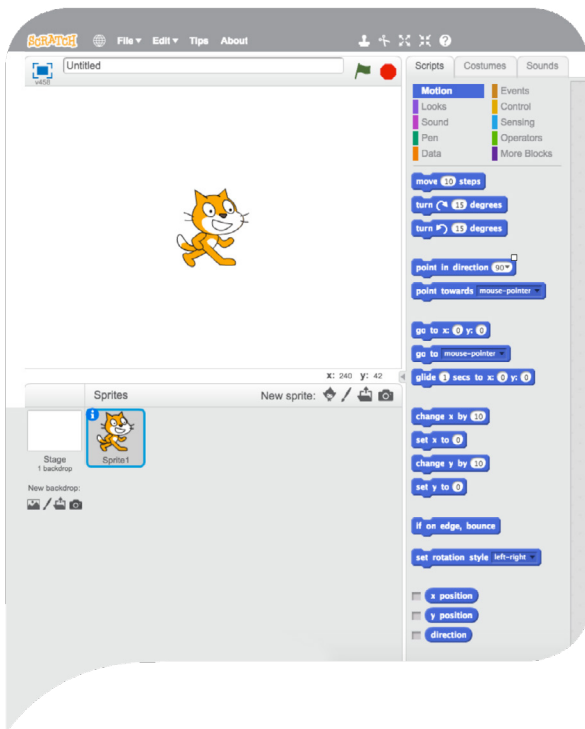


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...create their own interactive stories, games, and animations and then share them on the Web.

**Scratch Blocks** is a collaborative program that combines MIT's Scratch program with Google's Blockly program to create a user-friendly framework for building programming blocks in both vertical (text-based) and horizontal (icon-based) formats.

**ScratchJr** is an introductory programming language that enables young children (ages 5-7) to create their own interactive stories and games.



All of these programs are based on four basic learning principles.

### Projects

People learn best when they are actively working on projects — generating new ideas, designing prototypes, making improvements and creating final products.

### Passion

When people focus on things they care about, they work longer and harder, persist in the face of challenges, and learn more in the process.

### Peers

Learning flourishes as a social activity, with people sharing ideas, collaborating on projects, and building on one another's work.

### Play

Learning involves playful experimentation — trying new things.

## Learn to CODE, Code to LEARN

1

### Encourage Curiosity

When your kids ask you a question you don't know the answer to, reply, "I don't know, let's find out!" And then let them do the work.

2

### Expose Kids to a Variety of Technology

If your child loves programming, encourage them to learn more about robotics.

3

### Have Your Kids Teach YOU!

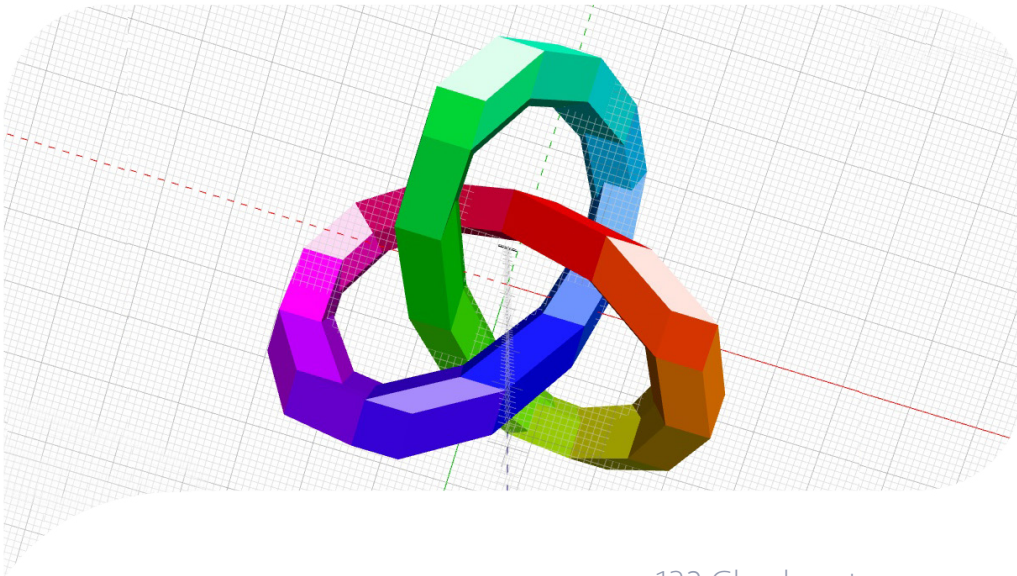
It is said that you never really know something until you can teach it. Ask your kids to show you how to code or build a robotic component – and then try it!

# 3D DESIGN:

THE WAVE OF THE FUTURE



The popularity of 3D printing has increased over the past decade and has given rise to more user-friendly 3D design software than ever before. Now kids as young as four can begin learning how to use 3D design software and hardware to design and print whatever their imaginations can create! Apps like Makers Empire, Solidworks and TinkerCAD are paving the way for kids to learn how to use modeling tools to sculpt and design objects. While apps like 3D Slash approach modeling in much the same way a stonecutter would. Inspired by Minecraft, the app has kids chisel away with a hammer to remove blocks. There are also a wide range of apps (based on Google's Blockly and MIT's Scratch) that will give kids an opportunity to combine what they're learning and create to their heart's content!



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