

CODING *for* KIDS

*A guide to empowering children
through programming skills*



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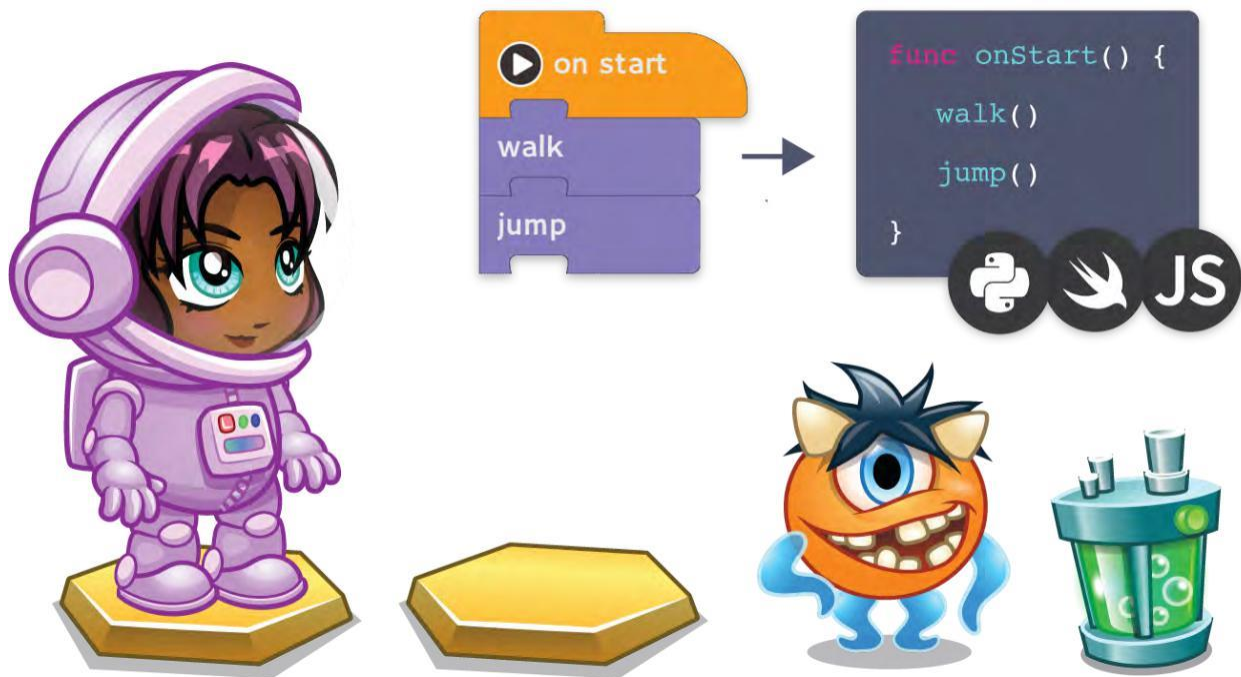


Intro to Coding

What Is Coding?

There's been a lot of discussion around coding lately, but it can be hard to figure out exactly what it means to code and how it plays a role in your child's future.

Coding (or computer programming), is the process of providing instructions to a computer so it performs a specific task. You may have heard of popular text languages like Java, Python, or Ruby, but even kids can easily learn to code using a visual block language like Tynker! Or Scratch



Why is coding so important? Believe it or not, we rely on code in the technology we use every day – our mobile phones, thermostats, televisions, cars, and even the device you're using to read this wouldn't exist without code.

What Can My Child Do With Code?

In addition to the many practical and innovative uses for code in today's world, it is also a creative medium. With a coding education, your child can use their new skills to create almost anything they imagine!



Make Apps & Games



Create Animations



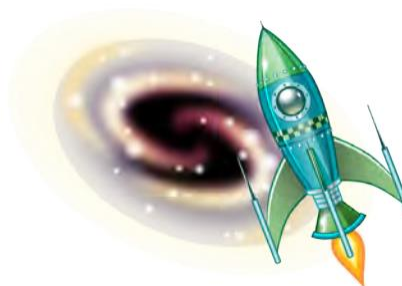
Mod Minecraft



Control LEGO®



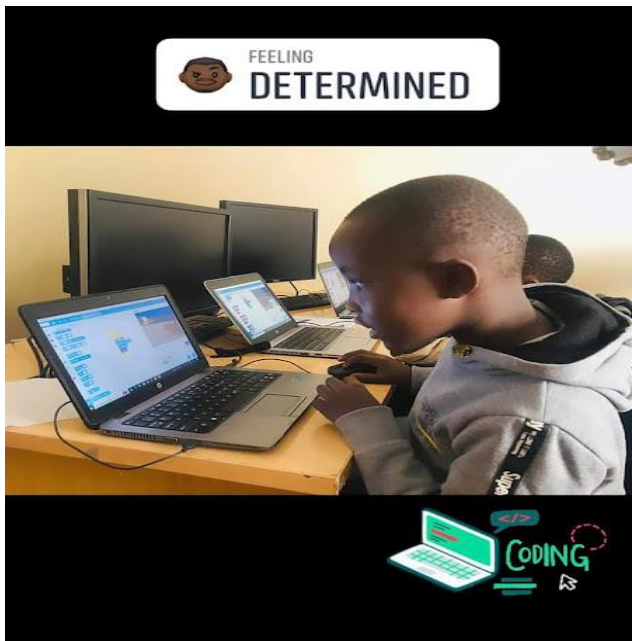
Fly Drones



Explore STEM

Why Should My Child Learn to Code?

Coding can help your child develop academic skills applicable to any grade level, in addition to building critical life skills like organization, perseverance, and problem solving.



Coding Improves Your Child's Academic Performance

It's been proven that learning to code reinforces math skills, helping kids visualize abstract concepts and apply math to real-world situations. It also teaches logical communication, strengthening both verbal and written skills.

Learning to code means learning a new language!

Coding instills qualities like creativity that help kids perform better in school. When they code, kids learn through experimentation and strengthen their brains, allowing them to find creative solutions to problems.

Coding Develops Important Life Skills

Coding is a basic literacy in the digital age. It's important for your child to understand and be able to innovate with the technology around them. As your child writes more complicated code, they'll naturally develop life skills like focus and organization.

It also develops resilience – when kids code, they learn that it's ok to fail and improve. There's no better way to build perseverance than working through challenges like debugging code!

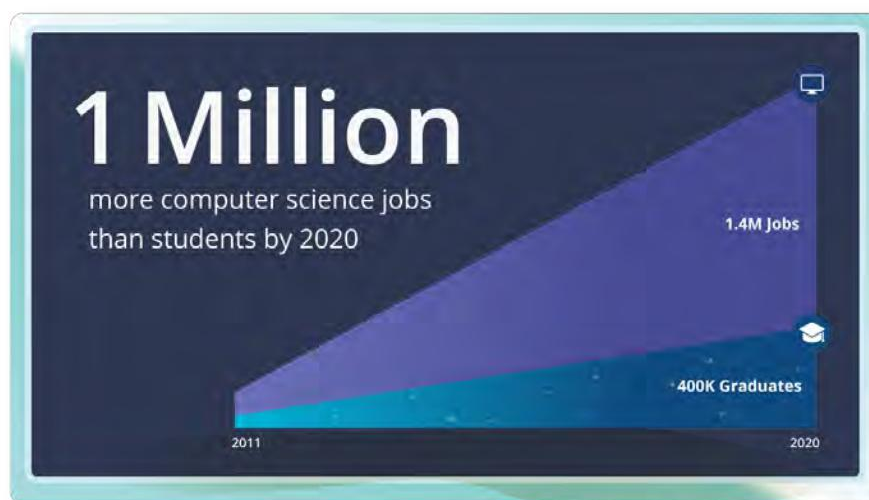
Kids also feel empowered to make a difference when they code – many kids in Coding global community use the platform to spread messages of tolerance and kindness. Parents have even reported that their kids develop more confidence as they learn to problem-solve through coding.



Coding Prepares Your Child for the Future

In today's rapidly evolving digital world, it's more important than ever that your child has the skills they need to adapt and succeed – and coding is a big part of that. Jobs are quickly becoming automated, and half of today's highest-paying jobs require some sort of coding knowledge. By 2030, there will be 1.4 million computer science–related jobs but only 400,000 computer science graduates to fill them, according to the Bureau of Labor Statistics.

At the very least, kids today must be familiar with basic coding concepts in order to prepare for the job market's demands. And like learning a second language, learning code is best done at a young age.



98,260

Median salary of
a Software Developer

"I think basically every job in the future is going to have to require some part of coding!"

Why Scratch or Tynker.

These are creative computing platforms that help kids to develop computational thinking and programming skills in a fun, intuitive, and imaginative way.

As they're guided through interactive game-based courses, kids quickly learn fundamental programming concepts. With Scratch or Tynker, your child can apply their coding skills as they build games, tell stories, mod Minecraft, create apps, control drones and robots, and more! We even offer a parent dashboard where you can follow your child's success and share their creations.

Interest-Driven Learning

The curriculum is organized around interest-driven learning. It's a simple philosophy that means kids who already love to play with games or watch cartoons will be more inclined (and genuinely excited) by the chance to integrate Scratch or Tynker with those interests, expanding their potential to play as they learn.



Kids begin to code using Scratch or Tynker's block-based visual language, which helps them recognize patterns and master **programming concepts like sequencing, loops, conditional logic, and algorithmic thinking.**

From there, they can flex their creativity by animating their own games and telling stories with code. Kids who'd like to dive deeper into concepts from the classroom will enjoy creating projects with our STEM tutorials and puzzles. Our interactive

notebooks make it fun for independent makers to learn JavaScript and Python at their own pace.

For more hands-on learners, our drone and robot programming courses are the perfect way to apply coding to the world around them. With the Scratch or Tynker app, kids can program their own mini-drone to fly patterns, perform flips and stunts, and even transport objects.

Game-Based Learning Experiences

These courses are made up of lessons designed to create a fun and captivating learning experience. Lessons build upon each other to ensure concept mastery, and guidance from interactive tutorials empowers kids to learn independently and at their own pace.



As they learn, kids build mini-games, solve puzzles, create coding projects, complete daily missions, earn exciting badges, and unlock new characters. This is why kids love learning with Scratch or Tynker – even though they’re mastering important programming concepts, they feel like they’re just playing a game!

Seamless Advancement to Text Coding



Scratch or Tynker introduces kids to coding with simple visual blocks. This technique allows young makers to learn the fundamentals of programming and create incredible projects without the frustrations of syntax. Whenever they're ready, kids can start experimenting in those same block-based activities by switching between visual and text code blocks. **Once kids become familiar with programming basics and syntax, they can move to full text programming with Android, JavaScript, and Python.**

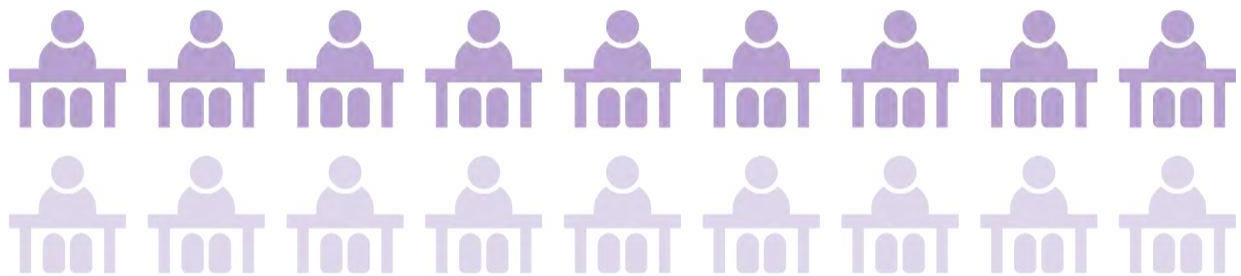
Global Community

Scratch & Tynker are award-winning platform is used by over 80,000 schools and 60 million kids, spanning more than 150 countries. Global partners include brands like Apple, Microsoft, Mattel, PBS, Sylvan Learning, and more.



80,000

Schools have coded with Tynker



60 Million

Students have used Tynker to learn to code

Getting Started

These game-based learning environment makes it easy for your child to learn to code! Your child will begin by using visual blocks to **learn fundamental programming concepts through game-based activities, then graduate to text coding languages like JavaScript, Python, and Swift as they gain confidence in their new abilities.**



Join Coding Community

Enroll to give your child access to fun coding activities.

- Get started with coding puzzles
- Code simple projects using tutorials
- Create Minecraft skins and mods
- Safe + Secure

Master skills faster with award-winning courses. Watch kids learn to code and build amazing things.

- 1,500+ fun learning activities
- 18 online courses



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Begin Coding at Home

The best way to help your child learn to code is to treat it like any other extracurricular activity – make a habit out of it! Building a habit can take a little time, but once your child integrates coding into their daily schedule, you will see their learning accelerate and their engagement skyrocket.



Make Screen Time Productive

If you're concerned about the amount of screen time your kids are engaging in, you're not alone. Millions of parents worry that kids spend too much of their lives glued to screens, and for good reason – according to the BBC, the average child spends over 6 hours each day looking at a screen.

But we'll let you in on a little secret: you can give in to your child's request for screen time by leveraging that time with **uplifting, engaging, and creative activities! It's a trend on the rise, and it's easier than you might think.**



Blend Learning and Fun

– the key is to find ways to keep them thinking and creating. Let them discover that learning is fun!

– kids get to use screens to create, then see the physical effects of their hard work and creativity in real-time. It's entertaining, of course, but it also provides a great feedback loop!

Distinguish Between Playing and Making

We all love a little bit of mindless screen time now and then – social media is to you as gaming is to kids – but kids have an immense capability to learn and create that needs to be explored.

Creativity is one of the most important skills your children can develop – in fact, a recent Forbes article cites creativity as the most important skill for a future of AI!

A good rule of thumb for leveraging your child's screen time is to find ways to focus on "making" rather than simply "playing." When kids are playing, they're following predetermined paths. When they're making, kids pave those paths.

Here's an example: your child is playing a game, clicking and dragging, following a predetermined path. She's enjoying herself and relaxing, but she's not as engaged as she could or should be.

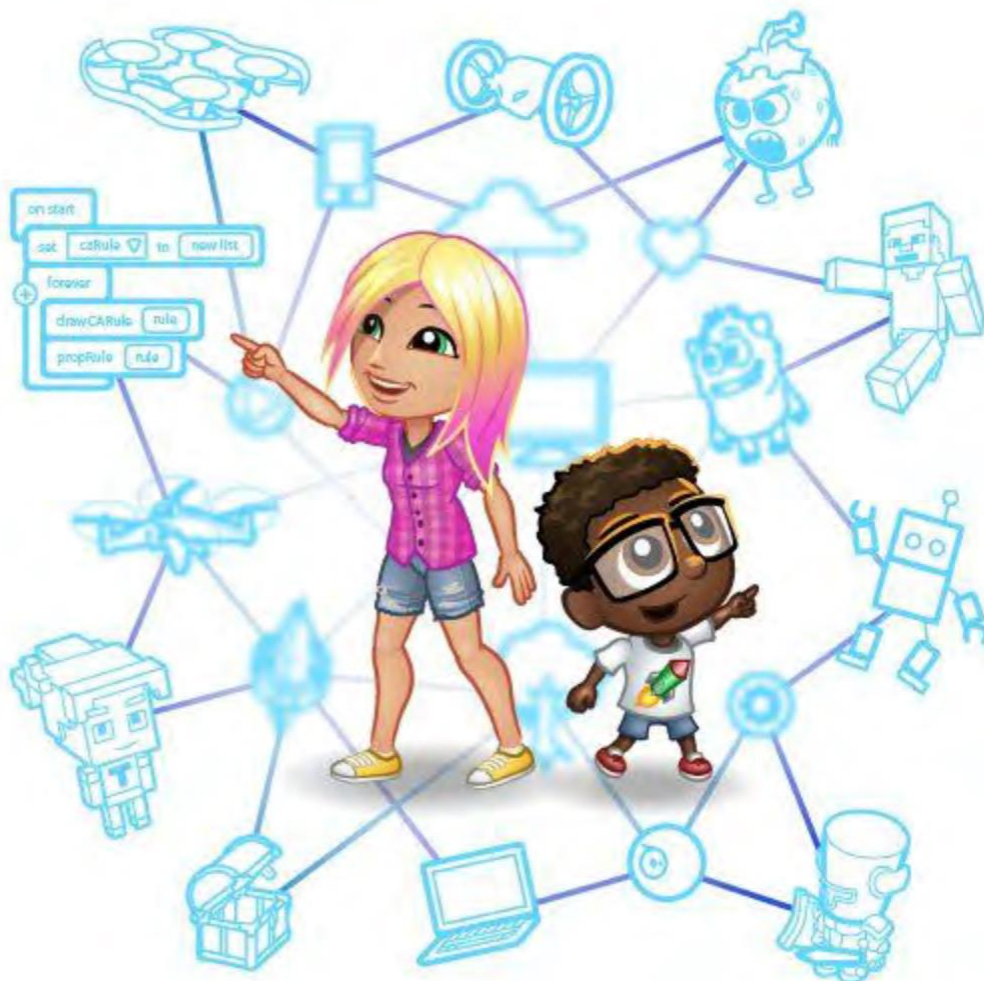
When she switches to building her own game, she's interacting with the platform in a new way. She's entertained by the prospect of a challenge, and pushes herself to learn new things in order to figure out how to create what she wants to make.

"My husband especially is very anti-screen time, so he doesn't like the kids just watching TV – but this kind of activity is something [Max] can do where he's actually being productive. There's a difference between passively just absorbing something and then actively engaging with it." – Max's mother

Look to the Future

By creating opportunities for your kids to learn during their screen time, you're helping them build good habits. As they begin to discover the magic of making, kids might even take their making skills offline with art.

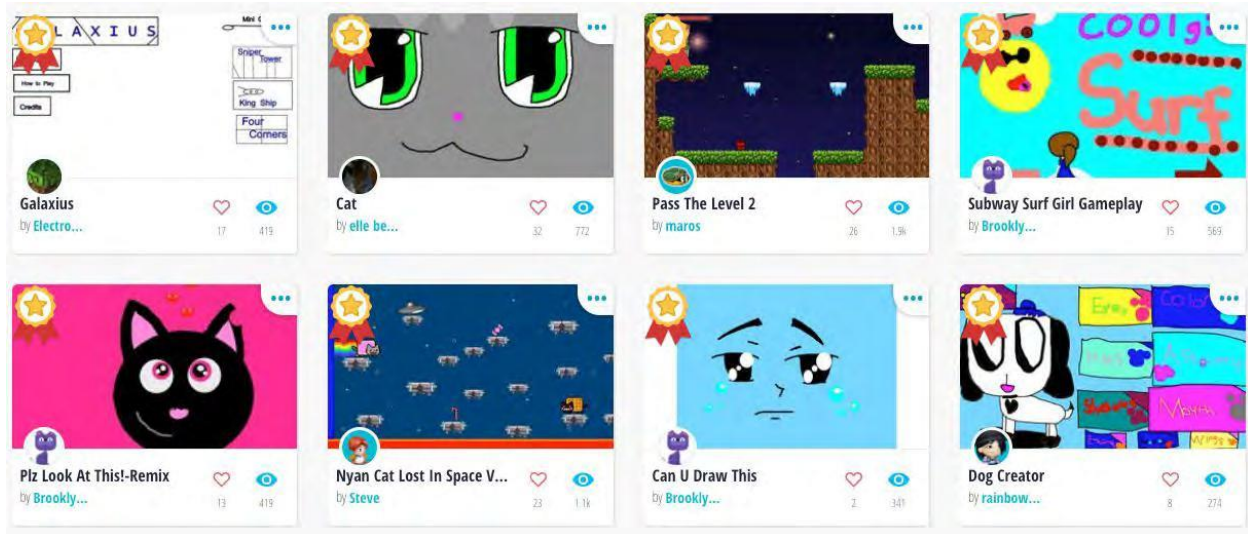
Quell your screen time concerns by leveraging that time for learning. Kids thrive when they're challenged and they love to create – what better way to encourage both?



Explore Creative Community

What happens when kids share coding projects with one another in a supportive and collaborative space? A whole lot of fun – and loads of teaching, sharing, and supporting!

When asked about their favorite feature, kids list things like the ease of coding with blocks, the ability to draw, and – almost unanimously – the Coders community!



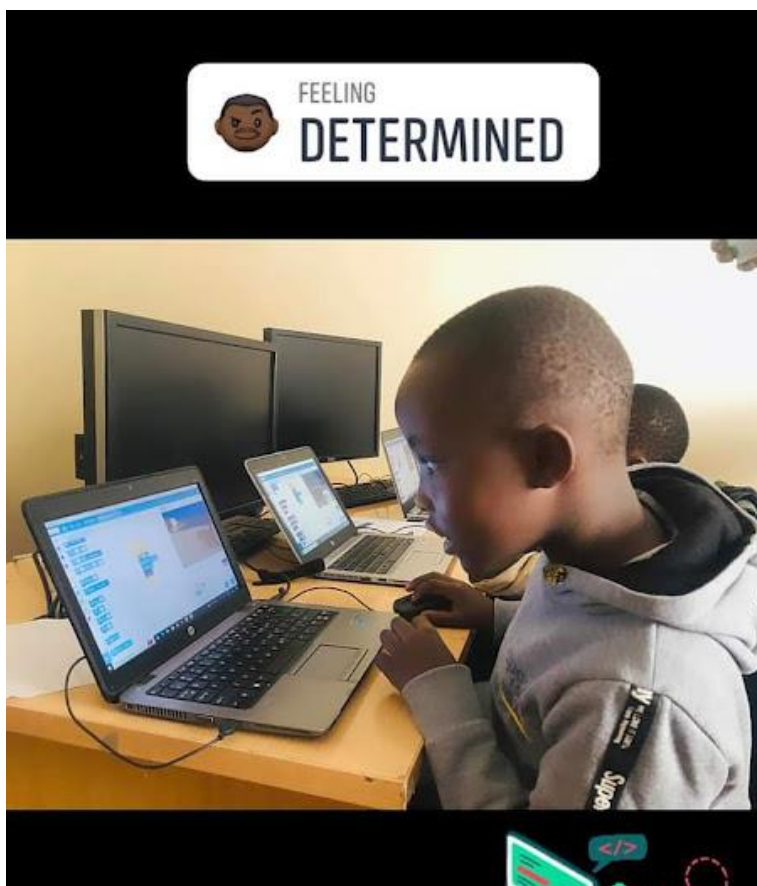
They Share Ideas

Using these tools, kids have embraced the ability to truly create anything in their imagination! Kids use the tools to share what's on their mind, teach others skills (like how to draw a turtle!) make games to share, and even create educational math activities.

"It's not just coding, but it's also giving them an opportunity to learn other topics, and share what they know about other topics, which I think its fantastic." – Muli, Featured Maker Mutua's father

A love for coding (and a common understanding of its difficulties) bonds the community together! They've all experienced the satisfaction of solving a complicated problem and the frustrations along the way.

A supportive community is an asset to kids learning to code. The ability to see what other young makers are up to, give and receive positive feedback, and share their message is important; it's a way for kids to teach and learn concepts like kindness as well as skills like animation (or how to make a pancake!).



Learn How Coding Helps Kids Grow

You've already read a little bit about how your child benefits from learning to code – you know that it can improve your child's academic performance, develop important life skills, and prepare your child for the future.

Read through this next section for a deeper look at the ways coding helps your child as they learn and grow. We cover how coding helps kids write better, earn better math grades, develop creativity, and improve focus and organization. You'll also learn why now is the time for your child to begin programming, how computer science prepares your child for the future, and why girls who create with code excel in STEM fields. There are so many reasons to help your child learn to code!



Improve Writing Abilities

Developing strong writing skills – especially when paired with technical abilities like coding – all but guarantees your child success in school and beyond. But did you know that reading, writing and coding actually go hand in hand? When they learn to code and create digital storytelling projects, children acquire skills that improve their writing, and they have fun in the process.



Coding is a New Medium for Imaginative Storytelling

A writer's tools for telling a story include words and sentences. Coders have access to a more open-ended medium, including pictures, music, and animation in addition to words. The flexibility of programming even allows children to make their story react to audience input.

“I really like creating stories, writing – so I thought if I could code it and make pictures, it’d be even better.” –Grace

Writing a script in a story-based game forces kids to think through the exact details and consequences of how their characters act. They can’t be vague – they have to blend their ideas, an important skill that takes practice.

Coding Reduces the “Blank Page” Syndrome

Creating a story-based game requires narrative pacing, compelling storylines, engaging dialogue, and an understanding of the audience. In short, it requires the same skills that some children struggle with when their English teacher hands out a creative writing assignment.

The difference is that staring at a blank sheet of paper often evokes panic, but programming offers multiple starting points.

When they code, kids start with one character, then experiment with dialogue, movement, and interactions. They build from there by adding other actors, scenes, and interactions. The program starts at the child’s point of interest and evolves to a final product through a process of experimentation and iteration. When coding, there is no “blank page,” only discrete problems to be solved.

Coding Teaches the Value of Concision

When kids first start coding, it takes them five lines of code to program a character to move across the screen. As they learn more programming concepts, like loops and conditional statements, they can condense that code to two lines. Children

learn that the goal of coding – or of writing – is to leverage the tools at their disposal in the most powerful way possible to express ideas efficiently and directly.

These are the kids who will write a 650-word college application essay that gets them noticed.

Coding Teaches Planning and Organizing Skills

Programming and writing follow a similar process. When children start a coding project, they plan out the different functions they will need and how these functions will work together to make the project work. Likewise, to write an essay, they must organize their ideas into paragraphs and understand how the paragraphs fit together.

Strengthen Math Performance

The conventional belief has always been that kids interested in coding should develop strong math skills. However, it turns out the reverse may also be true: coding can help children build math skills and make learning math more engaging and fun.



When kids learn to code, they develop key skills like problem solving and practice algorithmic and computational thinking – and when they learn to code with Scratch or Tynker, they have fun at the same time, so they’re more likely to stay engaged with the material.

Whether kids are learning to code at school or at home, you may just see an impact on their overall academic performance! Here are a few ways that coding helps kids learn math:

Coding helps kids visualize abstract concepts

Grasping abstract math concepts can be a challenge to many kids and put them off the subject entirely. Parents, teachers, and technology specialists are using These tools to help children visualize abstract math concepts.

Kids explore the real-world applications of math concepts

Repairing spaceships or saving puppies with Scratch or Tynker is a great way for a child to see concrete applications of math strategies.

Coding teaches problem-solving skills

Coding is a real-world way to teach mathematical thinking. When students create or debug a program, they practice solving problems

Coding makes math more fun

“Without realizing it, kids are identifying attributes and grouping variables, applying conditional logic, developing algorithmic functions, and calculating angles within geometric shapes. But most of all, they are patiently articulating hypotheses to solve problems, and boldly applying trial-and-error experimentation, strategies required by any field of study.

“If kids realize they are using math when programming games,” “it could actually build their confidence with math and show them that mathematical thinking can be cool.”

Math is cool? What could be better than that?

Develop Creativity

Imagine your kid staring at their computer screens, carefully calculating the next move, spending the better part of the hour trying to animate a moon orbiting the earth, a series of commands that is proving more complex than he had anticipated. But with every iteration and tweak, the determined child finds himself inching closer to his vision. Finally, he inputs -10 degrees on the X coordinate, 21 on the Y, and hits enter. He grins in giddy satisfaction as he watches his moon makes a perfect circle around the earth.



Creativity : We're all born with it. As kids, we embrace imaginative play, we ask questions, paint colorful pictures, and build elaborate things with our blocks, but somewhere along the way our capacity for creative thinking diminishes. It's not because we lack the "creative gene" – we just haven't reinforced it. Creativity is a skill that can be developed at home and in our schools through the cultivation of three qualities:

1. An experimenter's mindset
2. Whole brain thinking
3. An innate desire to be a creator (and not just a consumer)

1. Programming Teaches Kids to Experiment

Creative thinking begins with a questioning mindset. It can be taught by encouraging kids to experiment, explore their ideas, question their assumptions, make mistakes and learn from them.

“What if I tried X?” Testing their assumptions in a live environment frequently results in errors and bugs, giving kids the opportunity to find a workable solution. With practice, kids gain a proficiency in their technical and hypothesizing skills, allowing them to move onto solving increasingly complex problems, and eventually building programs completely on their own.

2. Programming Strengthens Whole Brain Thinking

Each side of the brain is said to control different parts of thinking and information processing. The left hemisphere is typically associated with logical, technical, and analytical thinking, whereas the right hemisphere is associated with imagination, artistic, intuitive thinking. We tend to think of creativity as a right-brain function, but the most creative thinkers and problem solvers can effectively engage both hemispheres. This idea of marrying “art with science” is what Steve Jobs built Apple on.

3. Programming Gives Kids the Confidence to Create

Like learning a sport or a musical instrument, cultivating creativity requires hard work and practice. For kids, if the work is confusing, monotonous, or the end goal unappealing, the desire to practice weakens. They need to be in an environment that builds confidence and instills in them a genuine desire to create. Kids pick up on technology with shocking ease, so giving them a basic knowledge of programming on a coding platform that is fun and easy to use is one of the best ways they can spend time in practice and actually enjoy the process. Learning programming on the right platform, one that is structured, engaging and well paced, puts kids on the path to fluency in the language and logic of programming, and ultimately gives them a

springboard to create – to not just play the games that they love, but to create the games they love to play.

Nurture Creativity Through Programming

Learning to code is very much like learning a new language – it gives kids a fluency not just in technology, but also in the language of creativity.

All our children deserve a chance to become creators instead of consumers of computer science.” It doesn’t mean they’ll all grow up to be computer programmers. Programming is part of the development of a valuable technical and creative skill set that will grow with them into adulthood, enabling them to thrive in our ever growing digital world. It’s creativity that lays the foundation for innovation, ingenuity and leadership because it represents the ability to connect existing ideas with new solutions, approaches and concepts. And we owe it to our curious and imaginative kids to give them the tools to be the creative thinkers and problem solvers of the next generation.

Build Focus and Organization

Soft skills are a popular notion in the business world, and they encompass qualities like leadership, communication, and perseverance. Although they may be difficult to measure, soft skills are vastly important for children to learn.

“Our goal is not to create programmers, but to offer coding as a life skill.”

Focus and organization are two soft skills that are the key to, well, everything! In a world where it's increasingly harder to focus, everyone could use a boost – especially kids. Coding is a great example of an activity that requires focus and organization, but more than that, it's a fantastic way to develop those skills.



Decreasing Attention Spans

It's no secret that the distractions we all face impact our ability to focus, and kids are no exception to that. Between shows on TV, games on phones, and other distractions, there's a lot of opportunities for kids to lose focus. **The instant gratification found in these activities can make it difficult to focus, which consequently makes it difficult to be organized.**

"You speak to young kids nowadays and because of all this stimulus everywhere – billboards and movies and everything going on – the attention, the focus, just isn't there."

Why Organization and Focus are Key to Coding

Organization goes hand in hand with focus, especially when it comes to writing complicated code. **In order to think through code logically, it needs to be organized in an intuitive way, and vice versa.** The more complicated the code, the more a programmer has to organize, incorporating elements like data structures to streamline the code.

"To me, it's a way of organizing ideas, structural thinking, and logical thinking. It's challenging because kids are forced to think about how to solve a problem."

Focus and organization are key to writing good code, but can coding help develop these skills? It's possible!

How Learning to Code Develops Focus and Organization

Programming can help establish the focus and organization it relies on, especially when working with a platform like Tynker. **The goal-oriented nature of an exciting project promotes focus and organization in kids. Kids are motivated to finish a**

project because it's exciting, so they push themselves to focus, organize, and make it happen!

"I like to code because it is sometimes complex. It's like when you're working up a hill that has jewels at the top. It's hard to get up it, but when you get to the top you're really proud and you think it's awesome." –

The logical nature of programming – identifying a problem, thinking through steps, and then implementing a solution – encourages organization of thought and sustained focus.

As with any other activity, coding improves with practice – as do the skills accompanying it. Inside and outside the classroom, applied to coding or homework, the focus and organization learned through programming will help kids in any endeavor!

Start Early: Girls Who “Make” Choose STEM

The growing shortage of women in computer science and engineering is a hot topic these days. Fortunately, the future looks bright for the next generation of girls, according to a new study by Intel. Their research finds that “girls that make, design and create things using technology may develop a stronger interest and greater skills in computer science and engineering.”

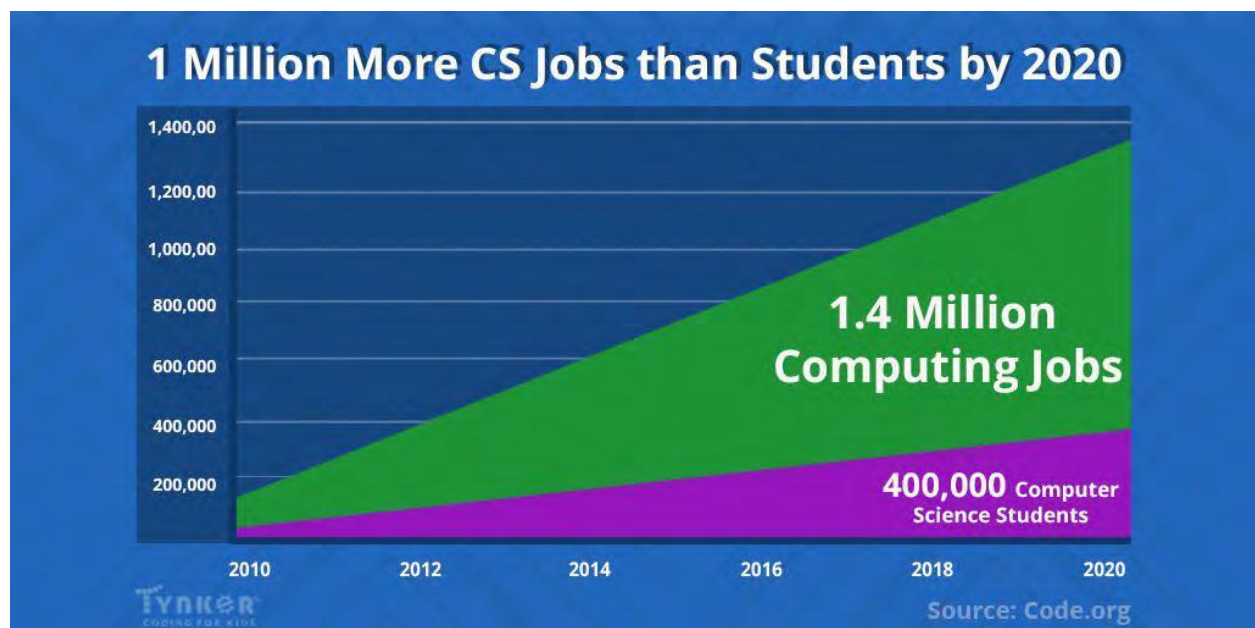


The Maker Movement is creating a generation of girls and women who show just as much interest as boys in making, inventing, and solving problems through technology.

Introducing children to coding is a crucial investment in their future. Coding is a skill of the 21st century, and with the rapid technological advancement of the modern age, it has quickly become as necessary a skill as reading and arithmetic that is important for a wide range of professions.

1. Coding skills are in high demand.

The tech industry is in constant need of workers. And it's not just coders or computer science majors – they need graphic designers, software developers, computer engineers, linguists, mathematicians. The jobs are not only plentiful, but they're also lucrative.



2. Prepare your kids for high school and beyond.

One of the biggest obstacles to succeeding in high school or college-level computer science classes is lack of confidence in tackling the difficult, unfamiliar material. Earlier exposure is the best solution – being introduced to coding at an early age makes it easier to learn the harder, more technical aspects of computer science in high school and college.

In fact, a study by Google and Gallup shows that early exposure is one of the most important ways we can shrink the gender gap in STEM, as it boosts confidence in kids, especially young girls, while they're still interested in technology.

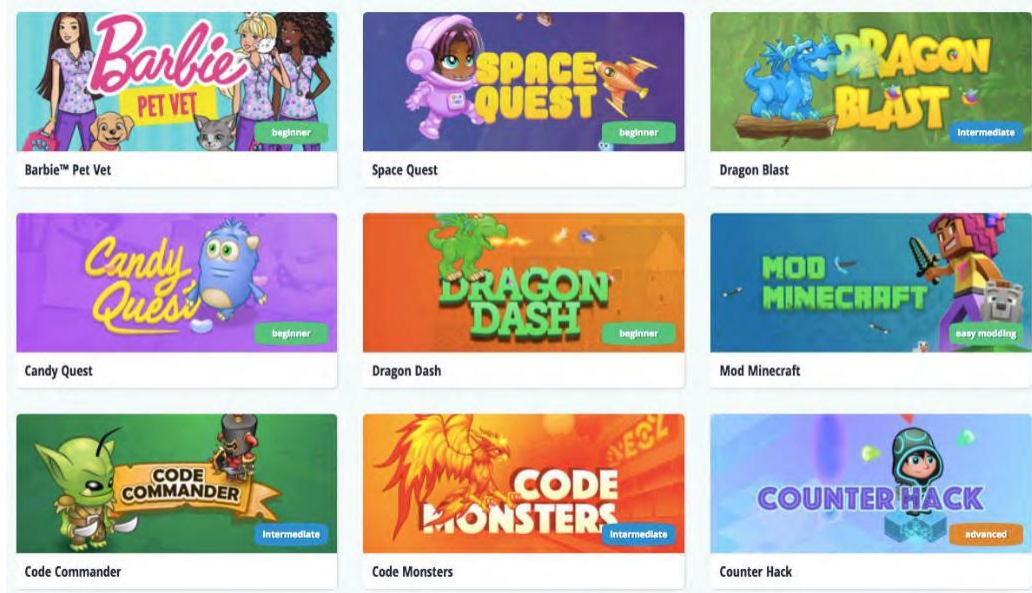
3. Coding is a lifelong skill.

Even if your child wants to do something outside of computer science when they grow up, their coding skills will prove useful across fields – coding teaches problem solving, organization, math, storytelling, designing, and more. The beauty of coding is that it comes in handy for different aspects of life and allows kids to express themselves creatively.

Add Coding to School's Curriculum

Unfortunately, there's a big disparity between what we would like as parents and the reality of the our education system today.

The movement to bring coding to schools has can be led by parents like you! These programs include Hour of Code, Holiday of Coding etc, movements to encourage students to learn programming, as well as makerspaces equipped with robots, drones, and more. These are to empower your child's school to add coding to the curriculum !



Running an **Holiday of Coding** is a great way to demystify the concept of programming, provide early successes, and share the positive impact of a computer science education.

Build a Makerspace for Hands-On Learning

Kids enjoy (and benefit from!) hands-on learning. Schools can set up a makerspace – a flexible learning space separate from the main teaching area – where kids write programs to Make games , control drones, robots, and more.



Setting up a makerspace gives tactile learners an opportunity to see their code play out in front of their eyes!