What Is Coding and Why Should Kids Learn It?

In Brief

Coding is the language that allows humans to communicate with computers and to teach the computer new skills. It's the basis of technologies across a wide array of industries and devices. Those that can't code only have access to the technology others provide them. But when you can code, technology is yours to invent and control. Kids that learn the skill early will understand it on a very deep level and will be uniquely positioned to benefit in the burgeoning information economy.

Humans use language to communicate. Whether we speak English, Spanish, German, Mandarin, French or any of the other roughly 6,500 languages alive in the world today, the end goal is the same. To share information and experiences with other people.

Computers share information as well. However, computers "speak" a language of 1s and 0s. On and off. The lowest level of language a computer understands is machine code, a purely numerical language. While it's possible to write programs directly in machine code, the process is extremely challenging and highly prone to errors.

To make life easier, computer scientists have created higher-level computer languages that look more like human language. These act as an intermediary between people and machine code. When these languages are compiled, they are converted into the machine code computers prefer. The process of writing instructions for a computer in one of these assembly languages, and there are quite a lot of them, is called coding.

To get a rough sense of what coding is, imagine it's date night and you're leaving the kids with a new babysitter. You're more than likely going to leave the sitter a detailed list of instructions for how to handle your kids while you're away. It might say things like, "If Bobby asks for juice make sure you put it in the purple sippy cup" and "When it's bedtime, you'll need to get Bobby into his pajamas, brush his teeth, and then read him three books before turning out the light, in that order."

In essence, you're "coding" your babysitter. You're telling him or her what to do, and how to do what needs to be done in the event that certain things happen throughout the night. You're coding a "program" for how to properly take care of your kids. For a piece of technology, a similar instruction might be, "When the user presses button two, open a new window, and display the requested information."

Coding isn't done in English, of course. It's written in a coding language. But the process is the same. We write code to tell computers how to do useful things. Without code, and people that know how to write it, computers would be very expensive paperweights.

Coding Drives the World

The software you use on your computer as well as the apps you use on your mobile devices, are all programs that someone had to code. Every bit of software and content you access on the internet is

based in code. The very structure of the internet itself is founded in code.

In fact, every piece of technology that we interact with on a daily basis were written with code. Every database, across every industry, from medicine to law, education, government, and energy, were built by coders. It's not an overstatement to say that today's global economy, from stock and bond markets, investment banking, monetary funds, and nearly every single retail purchase are influenced both directly and indirectly by the work of smart, industrious, and dedicated coding professionals.

There is no other career that touches so many different industries, objects, and people. The world runs on technology, and technology runs on code. Therefore the world runs on code, and coding is the key to this world.

Learning to Code Gives Kids Control

Computers and other digital technologies are enormously powerful. But when you don't know how to code, you can only use them as other people have decided they can be used. You can use the programs that other people have created, but if those tools don't do exactly what you want them to do, or if the tool you really need hasn't been created, you're out of luck.

When kids can code, they can create the tools they need. They can write their own programs and design them to their exact specifications. They can take ideas from existing programs and then improve them. Coding frees them from the limited, incomplete software and app choices other people are offering and allows them the power to invent anything they can dream of. Coding makes them creators, not consumers.

Learning to Code Gives Kids the Keys to the Future

Programming a computer is just the beginning. As mentioned, the world runs on technology, and all of that technology is controlled by code. The child that learns to code will have a world of possibilities open to them. They'll have an extremely marketable skill and will be able to design their ideal career. They'll be qualified to work on systems in any industry and contribute to projects that can literally change the world.

The irony is that all of this technology is replacing jobs in other areas. AI and machine learning algorithms are getting smarter every year. Autonomous vehicles are just over the horizon. When the technology is widely adopted, millions of driving jobs, from taxis to truckers, will be eliminated.[1] Low-skilled manufacturing jobs were outsourced or replaced by robots decades ago, and newer robots and artificial intelligence are gaining the ability to replace more skilled workers as well.[2]

1 "Self-driving cars will destroy a lot of jobs—they'll also create a lot | Ars ...." 24 Aug. 2018, https://arstechnica.com/tech-policy/2018/08/self-driving-cars-will-destroy-a-lot-of-jobs-theyll-also-create-a-lot/. Accessed 1 Aug. 2019.

2 "AI should worry skilled knowledge workers too - Brookings Institution." 8 Nov. 2017, https://www.brookings.edu/blog/techtank/2017/11/08/ai-should-worry-skilled-knowledge-workers-too/. Accessed 1 Aug. 2019.

As this process accelerates, ever-larger segments of the labor force will be replaced by automation. This is bad news for those being replaced, but great news for those workers capable of coding automated systems. Learning to code future-proofs your child's potential. Those that can code, and code well, will always be in demand, and that demand will only rise.

Coding Creates Well-Rounded Students

Learning to code involves learning how to think methodically - what is known as "Computational Thinking". Kids that learn to code learn how to take difficult problems and break them down into their root components, making it easier to find effective solutions. Coding teaches them deep analysis and strong problem-solving skills.

As a result, kids that can code are better prepared for every other subject they'll study throughout their academic careers. Coding teaches a skill set which is transferable to nearly every aspect of life. Anything that requires procedural, logical thinking can benefit from the computational model of thought that underlies a coding discipline. They become better thinkers, better test takers, better students.

Coding is one of the best skills a parent can share with their child. It prepares them for a rewarding, high-demand, and lucrative career and gives them an edge in every other area of life. It's difficult to find another skill set that is connected so deeply to the fabric of our lives and the future of the planet.

If this sounds good to you, you should consider signing your child up for classes with AppleTree.ai.

We've developed a novel approach to teaching coding that's equal parts effective and fun. We recognize that if you don't have both of those elements, it's difficult to keep a kid's interest. Our curriculum covers kids ages 6 to 16. The sooner your child starts learning to code, the better. It's their passport to new opportunities for the rest of their lives.