Technology in Action Guide

Computer Science/ Coding

Benefits of Computer Science and Coding

Improves Organization and focus skills	Programming teaches kids to experiment	Drives Innovation
Helps kids visualize abstract concepts	Story-based games requires narrative pacing, compelling storylines, engaging dialoged, and understanding audience.	Builds confidence
Builds perseverance and problem solving	Skills develop like problem solving and computational thinking	Allows kids to be creative
Computational thinking involved in computer programming involves logic, organizing and analyzing data, and breaking a problem into smaller and more manageable parts.		

Elementary Computer Science

Crash Course—Computer Science has a playlist of videos on the Computer Science field, including history and uses. There is a playlist on PBS and YouTube. There are 41 videos on the series that starts off with "Early Computing", Boolean logic and logic gates, Binary, Arithmetic and logic, instructions and programs.
PBS—https://to.pbs.org/2ryJsUi
YouTube- http://bit.ly/2ryGZcz

Pencil Code website allows users to learn professional programming languages using an editor that lets you work in Blocks or Text. Users can create programs that create art, make music, or create an adventure. There are many resources for the educator to help guide students through the program.
https://pencilcode.net/

Elementary Coding

Tickle app can control 20 different devices—Micro:bit, Sphero SPRK+, Dash and Dot, LEGO WeDo, Ollie, Drones and LightBlue Bean. There are many YouTube videos to learn the coding within Tickle for both educators and students. Tickle is available for iPad-
https://apple.co/2rAVHQn

Code.org is the key sponsor of "The Hour of Code", but also a full curriculum platform for coding in the classroom. The coursework can begin as early as "pre-literate"...no reading necessary, and anywhere after! Educators can create a teacher account in the Code Studio and find many resources to get classes on the path to coding. Full lessons and units are available and connections are made to ELA, Math, Science and SEL Standards.
https://code.org/educate

The Foos is a web platform that also has iOS and Android apps that build basic programming skills for the "PRE-READING" student. The first screen takes the student visually through the steps in a gaming environment that is enjoyable and instantly rewarding. The assistance built into the program is guided and well designed to assist students. A simple platform to help students build perseverance skills in a friendly environment.
http://thefoos.com/

Made with Code is designed by Google to encourage more girls to enter the field of coding this platform shows how coding can be more artistic, musical, and even fashionable. Projects start out simple and progress in difficulty. There are many resources available and a great page of mentors showing a great collection of interview with women of coding.
https://www.madewithcode.com/home/

Mobile Apps

Kodable is a companion piece to a free computer science curriculum on their website here. The curriculum is for K-5 grades with full lesson plans aligned to standards. It can also be used independently. This app is designed for ages 4-11 and is free, but does have extended levels available for additional fees. https://apple.co/2rxSNvx

Scratch JR. is the same platform as the website, but less choices to make it more simplistic and easier for earlier grade levels. This app works great for K-3rd grade students. Any projects created in this app can be incorporated in the Scratch App or the Scratch website platforms. This app is free and has no in-app purchases.
ANDROID http://bit.ly/2BLkU10 iOS https://apple.co/2BKHHdE

Secondary Computer Science / Coding

Applied Digital Skills by Google - The resources found here are targeted to MS, HS and Higher Education students. Project ideas such as creating If/Then adventure stories with Google Slides and Technology, Ethics and Security are just two of the curriculum units that can be found here. Each project shows the educator the amount of activities and the possible duration to complete the project. Search can be filtered by MS/HS or Higher Education. Educators can sign in with their Gmail Accounts to create classes for students.
https://applieddigitalskills.withgoogle.com/en/curriculum

Google Computer Science First is a group of CS Clubs with full lessons and activities based on specific themes. Originally created for after school programs, these lessons and unites can easily be used within a computer CS classroom, elective, specials situation. Lessons or projects are geared towards 4th-8th grade, but could easily go higher with some increase in expectations and technology used. Themes range from music, art, fashion, social media, sports, games and friends. Each unit includes videos for the students to so some of the initial learning is self-paced or could be done in a flipped classroom model. Students can try without logins or teachers can create class accounts.
https://www.cs-first.com/

Alice.org has a free software program that can be downloaded on either a Windows, Mac or Linux machines to learn programming. The website offers extensive resources for educators to implement this application in the classroom, even if the educator is new to coding. OFFLINE coding program so internet problems can be avoided.
http://www.alice.org/

Gamestar Mechanic is a free video game design platform that allows for classroom setup and teacher monitoring. Go on Quests that power up student's game design skills and let them earn items they can use to make their own games. Make original games with a powerful, easy-to-use design tool and a library of hundreds of sprites. The Educational Account offers many features and will allow students to learn and build many games...however, if this is the game platform for the class and the students...the "exclusive educator package" that opens up a huge amount of resources is $2 per student...one time fee...and the students retain access forever....into adulthood, if they want.
https://gamestarmechanic.com/

Scratch is a programming platform that builds interactive stories, video games or animations can all be accomplished on this platform. Students can share with each other and follow/leave feedback with students around the world on this platform. The platform is managed by MIT and is free of charge. Games are built with a drag and drop system of puzzle pieces that create a systematic routine of steps. Developing analytical skills and concepts that are essential for the 21st century student. In addition to the educator resources available on the main website there is also a ScratchEd Online Community where educators share resources. Here is the link. http://scratched.gse.harvard.edu/
Website: https://scratch.mit.edu/

Kodu lets kids create games on the PC and Xbox via a simple visual programming language. Kodu can be used to teach creativity, problem solving, storytelling, as well as programming. Anyone can use Kodu to make a game, young children as well as adults with no design or programming skills. Kodu does need to be downloaded onto the PC to be played. This then will allows for use when the internet goes down, is having connection issues, or classrooms that may be out of the WiFi range. https://www.kodugamelab.com/

Code Academy is a computer science platform to teach coding for upper elementary and secondary grade levels. The website has an abundance of resources to develop a course design to teach programming in many programming languages. Educators can manage student logins and follow their progression in their development of games and websites as they learn. The support base offered to teachers is fantastic and greatly helps even the most inexperienced teachers guide students in learning to code. https://www.codecademy.com/

Unplugged activities for All

Computer Science UNPlugged activities that incorporate data, algorithms, procedures and cryptography. Lesson plans and activities when connections to computers and the internet isn't available or needing a "plan B" for your classroom. http://csunplugged.org/activities/

Even MORE Resources

To find more resources and the latest up-to-date technology to support technology integration, please visit www.ilclassroomtech.weebly.com.

- Assessment tools
- Audio/video tools
- Content area support
- Digital portfolios
- Computer science
- Learning management systems
- Mobile apps
- Research tools
- Social Emotional Learning
- Technology terms