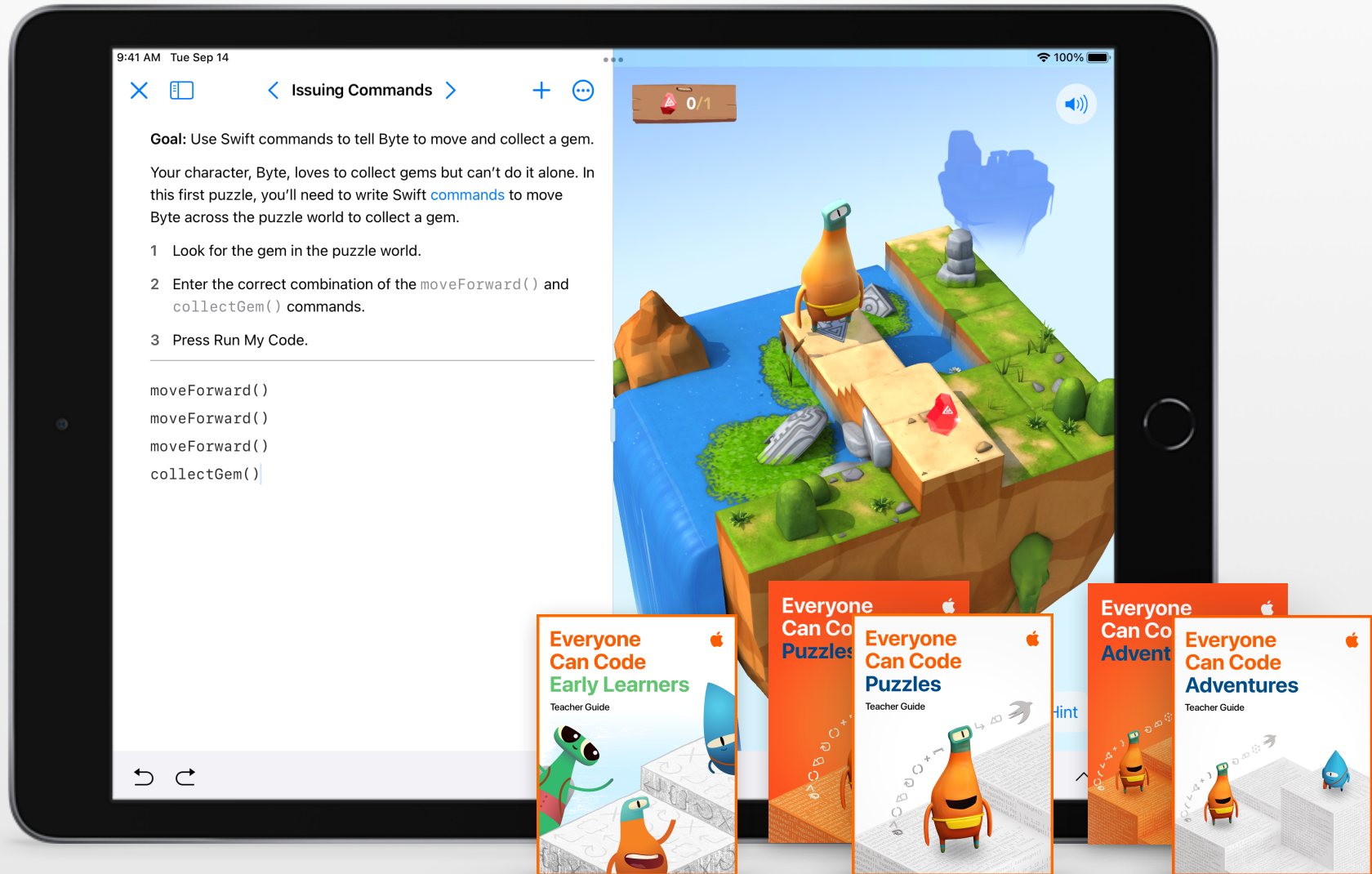


Apple Everyone Can Code

Curriculum Guide



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< Issuing Commands >

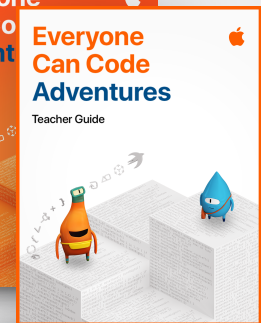
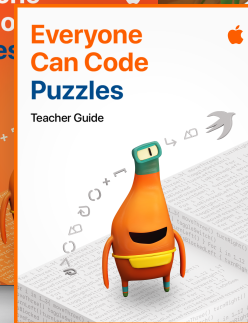
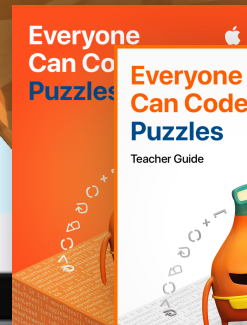
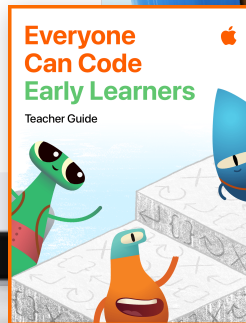


Goal: Use Swift commands to tell Byte to move and collect a gem.

Your character, Byte, loves to collect gems but can't do it alone. In this first puzzle, you'll need to write Swift **commands** to move Byte across the puzzle world to collect a gem.

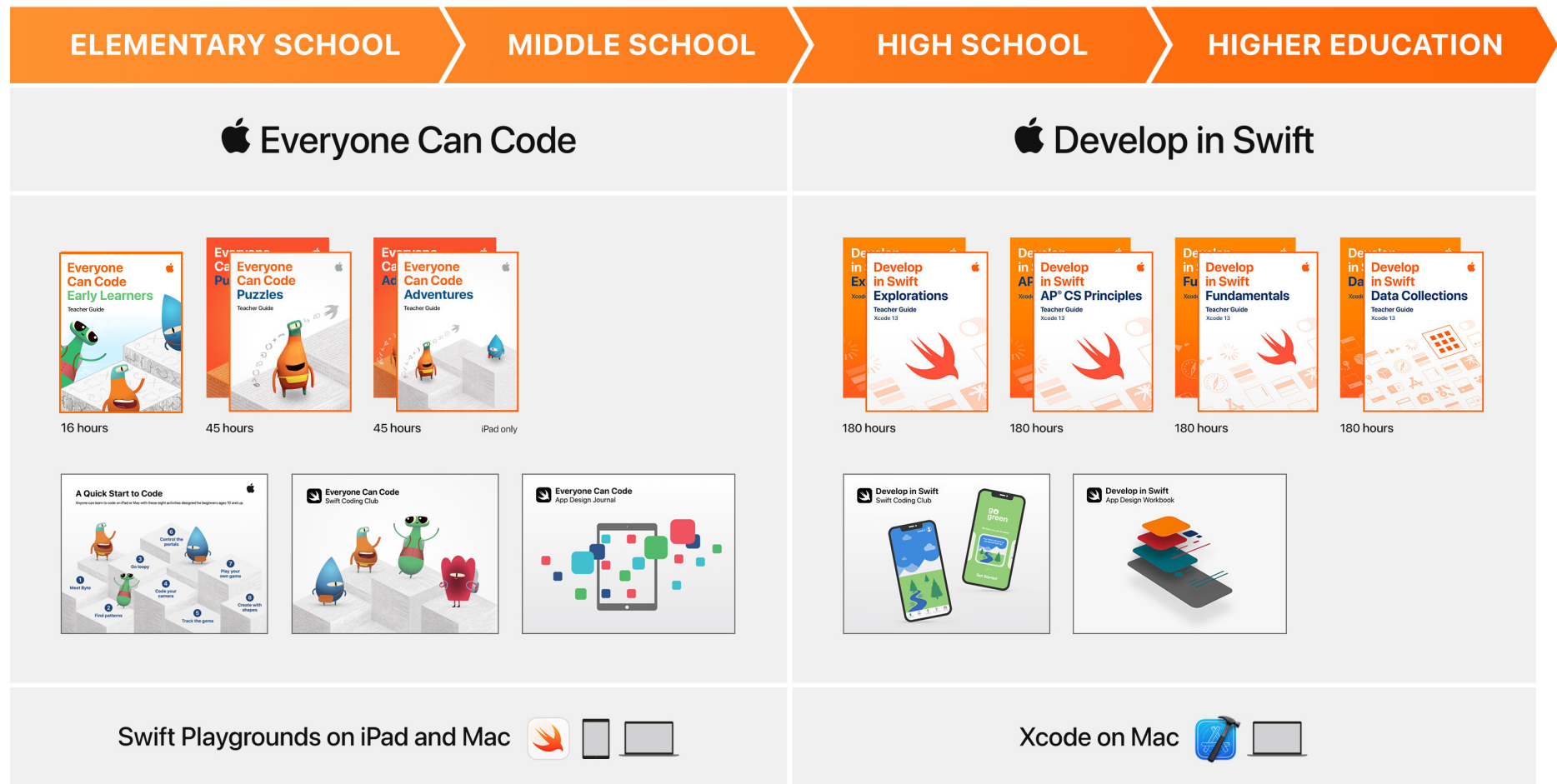
- 1 Look for the gem in the puzzle world.
- 2 Enter the correct combination of the `moveForward()` and `collectGem()` commands.
- 3 Press Run My Code.

```
moveForward()  
moveForward()  
moveForward()  
collectGem()
```



K–20 Coding Curriculum Pathway

Whether students are beginning coders or are ready to build their first apps, Apple has programs to support teaching and learning with Swift, the same programming language used by professional developers to build some of the world's most powerful apps.



Explore Swift Playgrounds

Real Swift code. At the heart of Swift Playgrounds is the same Swift programming language that's used to build many of the leading apps in the App Store today.

Interactive environment. Create code on the left side of the screen, and instantly see the results on the right with just a tap.

Touch to edit. Drag complex structures that wrap other code — like loops and function definitions — around existing code. Just touch the keyword, such as *for*, and the drag controls appear onscreen.

Shortcut bar. QuickType suggestions for code appear at the bottom of the screen, which let students enter the code they need by just tapping the shortcut bar.

Built-in glossary. Definitions help students understand specific terms.

Record and share. Students can record what they do onscreen to demonstrate their work.

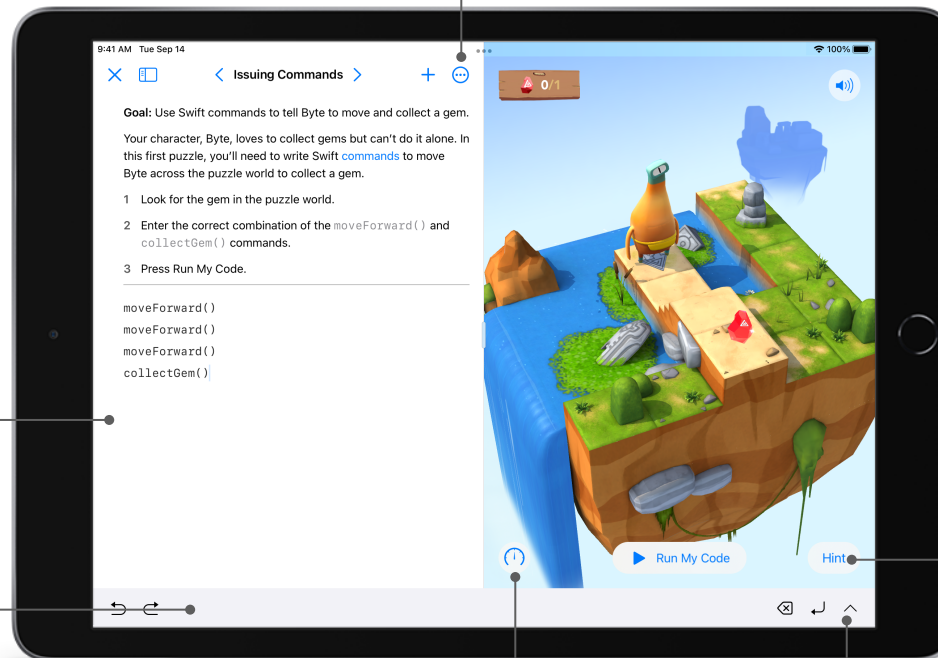
Immersive animations. Each section starts with an immersive animation that relates coding concepts to real life, aiding in student understanding.

Accessibility. Swift Playgrounds is designed with accessibility in mind. It takes advantage of the many powerful accessibility features of iPadOS and macOS, including Switch Control and VoiceOver. And it even provides additional voice commentary on the actions of characters as students control them with code.

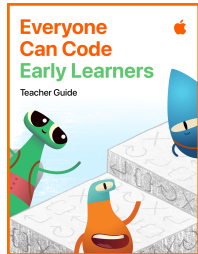
Helpful hints. Students can get help along the way if they get stuck. In many cases, hints change dynamically as students enter code.

Review code. Students can run code faster or slower, or they can step through it to highlight the lines of code as they execute — making it easier to identify where errors might occur.

Onscreen keyboard. A keyboard designed for Swift provides quick access to the numbers and symbols most commonly used in Swift code.



Everyone Can Code Scope and Sequence



Everyone Can Code Early Learners

Designed for facilitators who teach grades K–3, this guide contains five modules: Commands, Functions, Loops, Variables, and App Design. Each module includes lessons that help learners explore new coding concepts through science, art, music, and more. Learners share personal experiences and ideas as they explore coding topics. They discover how code works through hands-on activities and challenges, and they apply their new skills by writing code in the Swift Playgrounds app. In the App Design module, learners begin to develop design thinking skills in a culminating app design project. [Download Everyone Can Code Early Learners >](#)

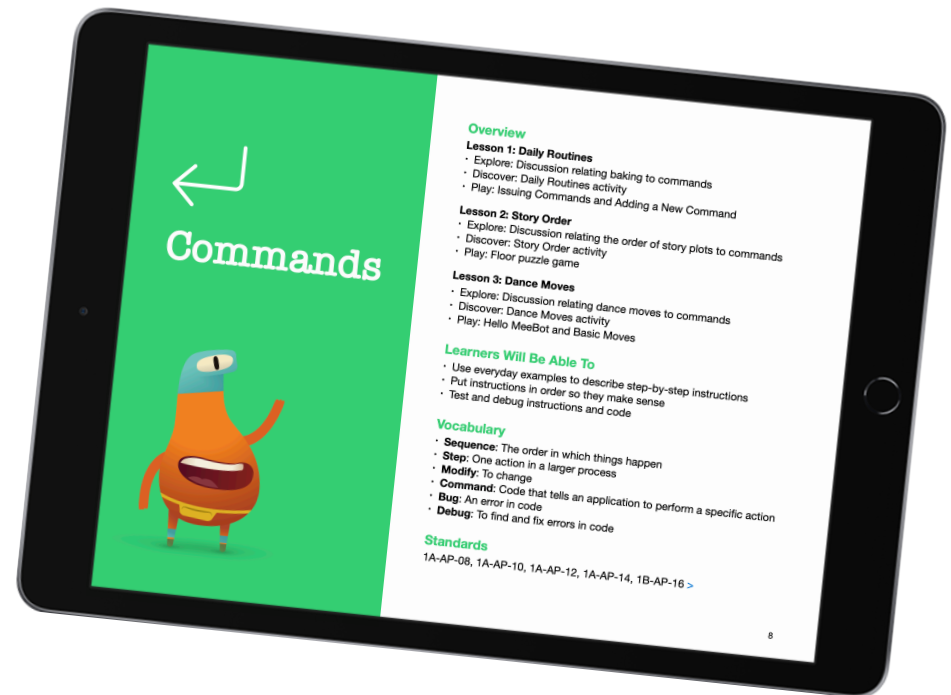
Commands (3 hours). Learners will connect everyday examples of executive functioning, language arts, and movement to code. This module focuses on describing step-by-step instructions, putting steps in the correct order, and testing and debugging commands in code.

Functions (3 hours). Through art, song, and social and emotional learning, learners will discover functions. This module targets deconstructing large problems into small steps, creating functions to solve a problem, and naming functions.

Loops (3 hours). Art, physical education, music, repeat! Coding topics include identifying a loop and looping sequences of commands to complete puzzles and tasks.

Variables (3 hours). Science, language arts, and community-building activities are used as the basis to learn variables. Learners will associate a variable name with a given value, change the value of a variable, and use different variable types.

App Design (3 hours). Inspire learners to solve problems they care about in school or in the community through a series of fun app design activities. They'll use design thinking, creativity, and empathy to invent an app idea.





Everyone Can Code Puzzles

Designed for students in grades 4 and up, *Everyone Can Code Puzzles* is a guide to Swift Playgrounds that reinforces problem-solving strategies and critical-thinking skills through over 45 hours of flexible activities. Each chapter helps students build on what they already know, experiment with new coding concepts, apply their understanding, and creatively communicate how coding impacts their lives.

[Download Everyone Can Code Puzzles >](#)

Chapter 1: Commands (3 hours). Students learn the importance of clear, precise commands. They organize code into sequences to achieve a goal, and they investigate the use of commands in everyday digital technologies.

Chapter 2: Functions (3 hours). Students explore the power of functions by grouping commands into a definition they can use over and over. They code a function to choreograph a robot dance routine, and they consider the types of functions that everyday digital technologies might use.

Chapter 3: For Loops (3.5 hours). Students recognize patterns in the world around them and in their code, and they learn how to use loops to write code that's more efficient.

Chapter 4: Variables (4 hours). Students learn about how computers store information, and they explore coding using variables to keep track of data and create flexible programs. They investigate how changing the value of variables changes the program output.

Chapter 5: Conditional Code (4 hours). Students explore how Boolean logic helps us make decisions in our everyday lives and in code. They practice writing conditional code to anticipate changing conditions.

Chapter 6: Types and Initialization (5 hours). Students explore how programmers use types to code more efficiently. They learn how to describe types according to their methods and properties.

Chapter 7: Functions with Parameters (4 hours). Students investigate procedures that require additional information to ensure the desired outcome. They learn how to make their functions more flexible and powerful by using parameters to provide additional detail.

Chapter 8: Logical Operators (6 hours). Students explore scenarios that require them to consider multiple factors before they make a decision. They learn to use logical operators to respond to multiple conditions.

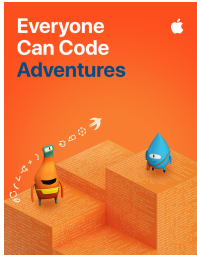
Chapter 9: While Loops (4.5 hours). Students explore the power of a while loop for repeating a section of code until a condition is met.

Chapter 10: Arrays and Refactoring (5 hours). Students learn about storing data in arrays, and they explore how coding using arrays and refactoring can help simplify their code.

Inspiration Journal: Students create a journal based on each chapter's coding concepts, responding to prompts and completing activities that connect their personal lives and ideas to code.

Teacher Guide: Designed to support teachers at any level of coding experience, this guide provides inclusive learning experiences, assessment ideas, and tips to support a range of learners. Included in the guide is the alignment to Computer Science Teachers Association (CSTA) K–12 Computer Science Standards for Level 1B (Grades 3–5), which covers the Algorithms and Programming and the Impacts of Computing concepts. [Download the Puzzles Teacher Guide >](#)





Everyone Can Code Adventures

Everyone Can Code Adventures is designed for students in grades 4 and up after they've completed *Everyone Can Code Puzzles*. Approximately 45 hours of hands-on activities let students experiment with hardware features and event-driven programming to express their creative ideas through code. Each chapter covers more advanced content in the Swift Playgrounds app, including Sensor Arcade, Blu's Adventure, Sonic Workshop, and Augmented Reality. Students also learn about app development concepts and the app design process throughout the course as they build up to a final project in Swift Playgrounds. [Download Everyone Can Code Adventures >](#)

Chapter 1: Objects in Views (6 hours). Students explore the use of coordinates to place objects in a view — short for *viewable area*. They practice coding with coordinate pairs, which are the intersection points between a vertical axis and a horizontal axis.

Chapter 2: Events and Handlers (5 hours). Students learn about the basics of event handling by examining touch events. They review functions with parameters as they add code to make their images and text interactive.

Chapter 3: Arrays (8 hours). To continue learning about event functionality, students review and extend their understanding of arrays. They learn new operators and methods that they can use with arrays. They also review some array functionality, operators, and nested for loops.

Chapter 4: More Events and Handlers (5 hours). Students combine their understanding of events and handlers with their understanding of arrays. They learn what kinds of arguments can be passed into an event handler function. They examine the many kinds of input available to them through iPad sensors.

Chapter 5: Functions as Arguments (8 hours). Students explore closures, including how to use a closure in a function. This extension of events supports students as they dive into augmented reality.

Chapter 6: Return Types and Outputs (3 hours). Students examine how to use a function to return a specific type. Until this point students have used functions to package procedures, and now they can create a type that can be used in other parts of a program.

Chapter 7: Classes and Components (7 hours). Students investigate the basics of components and how to piece them together to create something new. Students use design thinking and review types, and they learn about classes to group and organize data in a program. They use these components and connect them to create an app-like experience.

Teacher Guide: Designed to support teachers regardless of their coding experience, this guide provides inclusive learning experiences, assessment ideas, and tips to support a range of learners. [Download the Adventures Teacher Guide >](#)



Additional Resources

These resources offer aspiring coders more opportunities to learn, prototype, and share their ingenuity. They're a great way to introduce the world of coding to students, no matter where they're learning.



A Quick Start to Code

This PDF guide features eight fun coding activities for kids ages 10 and up. Students can learn to code in school or at home using the free Swift Playgrounds app for both iPad and Mac. [Download A Quick Start to Code >](#)

Swift Coding Clubs

Swift Coding Clubs are a great way to introduce code in after-school, summer camp, or other informal learning settings. The Swift Coding Club's modular design makes it perfect for both first-time coders and those with more experience. [Download the Swift Coding Club kit >](#)

App Design Journal

Students can use the App Design Journal to apply the app design process to solve problems in their school or community. The journal prompts students to brainstorm, plan, prototype, and evaluate their own app ideas, culminating in a pitch presentation of the app prototype. [Download the App Design Journal >](#)

App Showcase Guide

Encourage students to share their coding achievements with the broader community through community events, such as project demonstrations or app showcases. The App Showcase Guide provides practical support to help you plan and host a showcase event. [Download the App Showcase Guide >](#)

Inclusive Curriculum

At Apple, we believe that everyone should have the opportunity to create something that can change the world. For educators who teach students with disabilities, we've made accessible resources to extend coding to all students.

Accessible guides

The Everyone Can Code student and teacher guides are optimized for VoiceOver and include closed-captioned videos and audio descriptions. Each lesson has been designed to include accessible content, activities, and practice sessions to help bring coding to life for all learners.

Swift Playgrounds and VoiceOver instructional videos

Teachers and students can watch instructional videos from the Hadley Institute for the Blind and Visually Impaired to help them get started using Swift Playgrounds with VoiceOver. Learn how to download Swift Playgrounds, orient to the puzzle worlds, use custom rotor actions, enter code, and solve a simple puzzle.

[View the collection of videos here >](#)



Swift Playgrounds Tactile Puzzle Worlds

Tactile Puzzle Worlds provides Unified English Braille, large-print text, and embossed graphics to help students who are blind or have low vision navigate the coding puzzles in Swift Playgrounds. Teachers can print the tactile graphics with their own braille embossers or order printed copies. Download Tactile Puzzle Worlds below for PDF versions of the tactile graphics and instructions on how to print or order copies for your students.

[Download Tactile Puzzle Worlds >](#)

Coding Concepts in American Sign Language

Accessible videos in American Sign Language support Deaf students in learning to code. With closed captions and text transcripts, they're designed for everyone to understand and enjoy. And *Everyone Can Code Puzzles Teacher Guide* includes a range of American Sign Language videos that explain coding concepts. [View the collection of videos here >](#)



Supporting Educators

We offer a range of experiences to support educators and administrators as they deploy, manage, and teach with Swift Playgrounds and Apple products.

Download Everyone Can Code resources

- [Swift Playgrounds app for iPad](#)
- [Swift Playgrounds app for Mac](#)
- [Everyone Can Code Early Learners](#)
- [Everyone Can Code Puzzles](#)
- [Everyone Can Code Puzzles Teacher Guide](#)
- [Everyone Can Code Adventures](#)
- [Everyone Can Code Adventures Teacher Guide](#)
- [A Quick Start to Code](#)
- [Swift Coding Club kit](#)
- [App Design Journal](#)
- [App Showcase Guide](#)

Learn more about Develop in Swift resources

Develop in Swift provides students with practical experience designing and developing apps with Swift in Xcode to prepare them for college, a career, and even industry-recognized certification in app development.

- [Develop in Swift Curriculum Guide](#)
- [Develop in Swift Professional Learning Courses through Canvas](#)
- [Teaching Code collection on Apple Books](#)

Teaching Code

This page on [apple.com](#) includes information about teaching code, as well as programs from Apple that support educators who want to teach learners of all ages — from someone who's just starting to someone who's ready to get certified in Swift.

[Learn more >](#)

Apple Teacher

Apple Teacher is a free, self-paced professional learning program that offers unlimited access to learning materials and content for using Apple technology in education. [Learn more >](#)

Apple Professional Learning

Apple Professional Learning Specialists lead hands-on, immersive experiences that help educators develop innovative instructional practices and engage students in deeper learning. To learn more, email sea_aels@apple.com.

