DroneBlocks:
Coding with Drones

Grades: 4-8

ENRICHMENT CAMPS

Students: Up to 30, working in 6 groups

Contact Hours: 12+ hours

The camp includes 12 days of activities, each designed to last about one hour. Use one lesson a day, clump them together into larger blocks or break them apart to be worked in one at a time throughout the course of a school year.

Recommended Settings:
- Summer camps
- Classrooms looking for hands-on STEAM activities
- After-school programs

Pricing Options:
- Full kit: $2995
- Print curriculum only: $495*
- Digital curriculum download: $429**

Technical Requirements:
- One smartphone or tablet required per drone as a radio controller (requires iOS 9.0 or later, or Android 4.4.0 or later; not compatible with FireOS, the operating system for Amazon tablets)
- Best if used when an Internet-connected device and video projector are available

Curriculum Topics:
- Aerial Robotics
- Autonomous Drone Operations
- Algorithms & Programming
- Refactoring & Optimizing Code
- Loops, Variables & Conditionals

Assessment:
Formative or summative assessments in the Check for Understanding section found at the end of each lesson.

Materials:
DroneBlocks Camp comes with an Instructor Guide, a digital curriculum download and all the supplies needed for 12 days of activities:
- Brick minifigs: 6
- DJI Tello programmable mini quadcopters: 6
- Indoor obstacle course: 6 free-standing keyhole gates
- *Introduction to DroneBlocks* online course student licenses: 50
- LiPo safe storage bag: 1
- Playing cards: 6 decks
- Safety glasses: 30
- Stopwatches: 6
- Storage tubs: 1
- Tape measures: 6
- Tello brick adapters: 6
- Tello hard shell carry cases: 6
- Tello LiPo batteries: 12
- Tello LiPo battery multi-charger: 4
- Tello prop guards (extra set of 4): 6
- Tello propellers (extra set of 4): 6
- USB charging cables: 6
- USB multi-port wall charger: 1

Logistics and Storage:
Each camp is shipped in a sturdy, reusable tub, safely storing materials during camp and throughout the year.

Training Available:
Professional development webinar training is available. Speak with a PCS STEAM Program Specialist for more information.

Shipping Availability:
Check with a PCS STEAM Program Specialist.

Not available in Connecticut, New Jersey and New York.

* includes *Instructor Guide*, 50 student licenses to Introduction to DroneBlocks online course

** includes PDF of *Instructor Guide* and 50 student licenses to Introduction to *DroneBlocks* online course

Alignments & Standards

Habits of Mind:

16 "thinking habits" developed by Art Costa and Bena Kallick to empower students to succeed in a 21st century learning environment.

- Thinking and Communicating with Clarity and Precision
- Thinking Interdependently

21st Century Skills:

A set of widely-applicable abilities essential for success in the information age.

- Information, Media, and Technology Literacy
- Communication and Collaboration

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CCSS

Aligned to International Technology and Engineering Educators Association (ITEEA) standards for technological literacy.

- CCSS.MATH.CONTENT.4.MD.A.1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec.

- CCSS.MATH.CONTENT.4.MD.C.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.

- CCSS.MATH.CONTENT.6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers.

- CCSS.MATH.CONTENT.6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

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ISTE

Aligned to International Technology and Engineering Educators Association (ITEEA) standards for technological literacy.

- I7c. Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

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ICSS

Idaho Computer Science Standards, built on the interim 2016 CSTA (Computer Science Teachers Association) standards

- 3-5.AP.07. Construct an algorithm to accomplish a task, both independently and collaboratively.

- 3-5.CS.01. Create code to model intelligent behavior in computing devices (e.g. CS unplugged activities, robot programming).

- 3-5.IC.02. Explore the connections between computer science and other fields.

- 6-8.AP.02. Compare different algorithms that may be used to solve the same problem by time and space efficiency.

- 6-8.AP.04. Apply an iterative design process (define the problem, generate ideas, build, test, and improve solutions) in problem-solving, both individually and collaboratively.

- 6-8.CS.01. Exemplify how computational devices impact the quality of life (both positively and negatively) and enhance the ability of people to perform work, communicate, and interact with others.

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