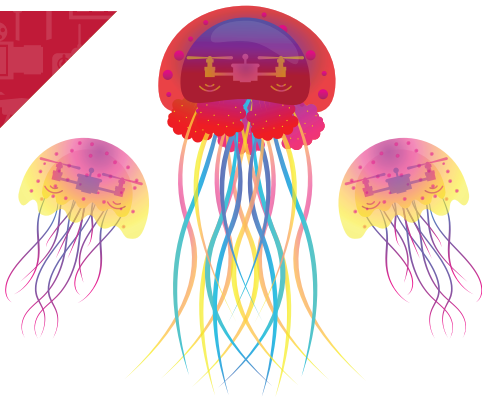


# DRONE DESIGNERS: EXPLORING STEAM CAREERS

Grades: 4-8



**Students:** Up to 30

**Curriculum Contact Hours:** 12+ hours

Includes 12 lessons, 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:**

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

**Pricing Options:**

- Complete Program: \$2,995<sup>00</sup>
- Curriculum Printed Copy: \$595<sup>00</sup>
- Curriculum Digital Download: \$479<sup>00</sup>
- Refill Kit: \$349<sup>00</sup>

**Assessment:**

The curriculum includes team challenges to test coding, drone costume design and flight skills.

**Curriculum Topics:**

- Art and Technology
- Autonomous Drone Operations
- Algorithms & Programming
- Engineering Design Process
- Real-World Careers

**Technical Requirements:**

6 compatible devices (one per drone) running the DroneBlocks app and 6 additional Wifi-enabled devices for accessing music.

The DroneBlocks app requires the use of a Wifi-enabled smartphone, tablet, Chromebook, desktop or laptop running Android, iOS or ChromeOS. (Note: DroneBlocks is not compatible with FireOS, the operating system for Amazon tablets.)

**Shipping:**

Contact a PCS STEAM Program Specialist for shipping options.

**Materials:**

*Drone Designers* comes with an Instructor Guide, a digital curriculum download and all the print materials and supplies needed to engage 30 learners over 12 lessons:

- Cardstock (white) (250ct): 1
- Cardstock (asst. glitter colors) (40ct): 1
- Colored pencils (12pk): 6
- Construction paper (50 pk): 1
- Craft foam (24ct): 1
- Digital scale: 1
- LED button light: 6
- LiPo batteries: 12
- LiPo battery multi-charger: 3
- LiPo safe storage bag: 1
- Metal washers: 60
- Mini quadcopters: 6
- Pencils (#2) (12pk): 3
- Pencil sharpeners: 6
- Plastic container: 1
- Production Team Lanyards: 30
- Protective cages (for quadcopters): 6
- Safety glasses: 30
- Scissors: 31
- Storage tub: 1
- String (ball): 1
- Superglue (6pk): 1
- Tape (double-sided-rolls): 6
- Tape (masking tape rolls): 6
- Team tote bags: 6
- Tissue paper (24ct): 1
- USB charging cables: 6
- Velcro fasteners (12ct): 6

**Training Requirements:**

Professional development webinar training is available. Talk to a PCS STEAM Program Specialist for more information.

# Alignments & Standards

Go to [edventures.com/products/drone-designers](http://edventures.com/products/drone-designers) for detailed standards for each content area and grade level.

## Habits of Mind

- Applying Past Knowledge to New Situations
- Creating, Imagining and Innovating
- Responding with Wonderment and Awe
- Questioning and Posing Problems
- Taking Responsible Risks
- Thinking Flexibly

## 21st Century Skills

- Communication and Collaboration
- Creativity and Innovation
- Critical Thinking and Problem Solving
- Information, Media, and Technology Literacy

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## Common Core State Standards for English Language Arts:

- ELA-LITERACY.SL.4.1/CCSS.ELA-LITERACY.SL.5.1/CCSS.ELA-LITERACY.SL.6.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4-6 topics and texts, building on others' ideas and expressing their own clearly.
- ELA-LITERACY.SL.4.2/CCSS.ELA-LITERACY.SL.5.2/CCSS.ELA-LITERACY.SL.6.2: Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally. / Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

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## Next Generation Science Standards

- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

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## National Core Arts Standards

- VA:Cn11.1.6a: Analyze how art reflects changing times, traditions, resources, and cultural uses.
- VA:Cr2.1.5: Experiment and develop skills in multiple art-making techniques and approaches through practice.
- VA:Cr3.1.8a: Apply relevant criteria to examine, reflect on, and plan revisions for a work of art or design in progress.
- VA:Pr5.1.8a: Collaboratively prepare and present selected theme-based artwork for display, and formulate exhibition narratives for the viewer.

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## Idaho Computer Science Standards

- 3-5.AP.06. Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming).
- 3-5.CS.02. Identify, using accurate terminology, simple hardware and software problems and apply strategies for solving these problems (e.g. rebooting the device, checking the power, access to the network, read error messages, discuss problems with peers and adults).
- 6-8.AP.02. Compare different algorithms that may be used to solve the same problem by time and space efficiency.

## International Society for Technology in Education

- 1d. Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.
- 5d. Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

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