

Coding arguments
Unplugged



OVERVIEW

Introduce arguments by having kids do a repetitive task.



OBJECTIVES

1. Students will be able to explain the advantage of using arguments
2. Students will be able to call functions with an argument



AGENDA

Length: 45 minutes

1. Warm-up - Large pixel bot grid
2. Arguments Analogies - Explore arguments using golf swing and drill bit analogies.
3. Pixel bot challenge - Solve pixel bot challenges with arguments



VOCAB

Argument - Specific value supplied to a function call



MATERIALS

1. [Lesson 7 | Warm-up worksheet](#)
2. [Lesson 7 | Worksheet 1-1](#)
3. [Lesson 7 | Worksheet 1-2](#)

4. [Lesson 7 | Worksheet 1-3](#)
5. [Lesson 7 | Worksheet 2](#)
6. Scratch paper grids
7. Small pixel bot cutout for each student
8. Magnetic pixel bot
9. Scratch paper grids
10. Pencils
11. Whiteboard



WARM-UP



Length: 10 minutes

Students solve a puzzle in a large pixelbot grid.

Prep:

- Draw the Pixel Bot image from [Lesson 7 | Warm-up worksheet](#) on the whiteboard
- Distribute [Lesson 7 | Warm-up worksheet](#)

| Teacher Actions | Student Actions |
|--|---|
| <p>1 Individual work: Ask students to write code to create the image from Lesson 7 Warm-up worksheet.</p> | <p>1 Students individually fill out the Lesson 7 Warm-up worksheet</p> |
| <p>2 Randomly call on one student at a time to provide each next line of code.</p> | <p>2 If called on, students provide the next line of code.</p> |
| <p>3 Discuss what made this particular picture difficult or frustrating to code.</p> <div>Possible answer: It required a lot of code because of the size of the grid.</div> | <p>3 Students raise their hands to provide an answer.</p> |



GOLF SWING AND DRILL BITS



Length: 20 minutes

Explore golf swing and drill bit analogies that help students arrive at concept of parameters/arguments.

Prep: Distribute [Lesson 7 | Worksheet 1-1](#)

| Teacher Actions | Student Actions |
|--|---|
| 1 Individual work: Ask students to fill out Lesson 7 Worksheet 1-1 . | 1 Students fill out Lesson 7 Worksheet 1-1. |
| 2 As a whole class, pool students' ideas. | 2 Students share ideas. |
| 3 Individual work: Hand out Lesson 7 Worksheet 1-2 and ask students to give it a try. | 3 Students fill out Lesson 7 Worksheet 1-2 . |
| 4 Discuss how to write the proper syntax for the golf and drill bit programs. Write a few examples of the syntax on the board and ask students to | 4 Students predict the teacher's code. |

| | |
|---|--|
| <p>predict how far the ball would go or how big the hole would be.</p> | |
| <p>5 Individual work: Hand out the next Lesson 7 Worksheet 1-3 Cont'd and ask students to map these ideas over to pixel bot.</p> | <p>5 Students fill out next part of Lesson 7 Worksheet 1-3.</p> |
| <p>6 Discuss students' ideas for Question 6. Answer: The process is exactly the same (the golf swing never changes; the drill and the drill motion never change), but we can customize the output by changing the inputs (golf club, drill bit).</p> | <p>6 Students raise their hands to provide answers</p> |



ARGUMENTS



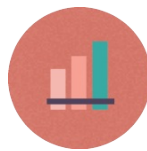
Length: 5 minutes

Explain how to use arguments through observation.

Prep: None

| Teacher Actions | Student Actions |
|--|---|
| <p>1 Point students back to the problem on the whiteboard from Lesson 1 Warm-up worksheet.</p> | |
| <p>2 Tell students that the elements can use an argument. An argument is extra information to customize the output of a function. The argument goes in between the parenthesis that follow the name of the function.</p> <p>Example: <code>up(5)</code></p> | |
| <p>3 Ask students to say once again what the argument will do in the case of the movements?</p> <p>Answer: The number controls how many spaces to move in that direction.</p> | <p>3 Students raise their hand to provide an answer.</p> |

| | |
|--|--|
| | |
| <p>4 Add <code>paint('blue')</code></p> | |
| <p>5 Ask students what they think the argument will do in the case of the paint icon?</p> <p>Answer: the argument controls what color the turtle will paint</p> | <p>5 Students raise their hand to provide an answer.</p> |
| <p>6 Ask students how changing the color next to the icon relates to changing clubs in the golf swing? Answer: In both examples, the action is the same (swing the golf club, paint the square) but the input can be changed to customize the output.</p> | <p>6 Students raise their hand to provide an answer.</p> |
| <p>7 Solve the warm up problem while narrating the steps out loud.</p> | <p>7 Students observe as the teacher demonstrates how to solve the problem using arguments.</p> |



CODING WITH ARGUMENTS



Length: 10 minutes

Students use arguments to solve coding challenges.

Prep:

- Distribute [Lesson 7 | Worksheet 2](#)

| Teacher Actions | Student Actions |
|--|---|
| <div>1</div> Individual work: Students work on the problems on Lesson 7 Worksheet 2 . Remind students to use arguments to solve the problems more efficiently. | <div>1</div> Students individually fill in the problems on their worksheet. |