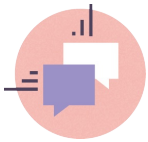
Coding arguments
Unplugged



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

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] [worksheet1-1].	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] [worksheet1-2] and ask students to give it a try.	3 Students fill out [Lesson 7 | Worksheet 1-2] [worksheet1-2].
4 Discuss how to write the proper syntax for the golf and drill bit programs. Write	4 Students predict the teacher's code.

	a few examples of the syntax on the board and ask students to predict how far the ball would go or how big the hole would be.		
5	Individual work: Hand out the next [Lesson 7 | Worksheet 1-3] [worksheet1-3] Cont'd and ask students to map these ideas over to pixel bot.	5	Students fill out next part of [Lesson 7 | Worksheet 1-3] [worksheet1-3].
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).	6	Students raise their hands to provide answers

ARGUMENTS

Length: 5 minutes

Explain how to use arguments through observation.

Prep: None

Teacher Actions	Student Actions
1 Point students back to the problem on the whiteboard from Lesson 1 | Warm-up worksheet.	
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. Example: `up( 5 )`	
3	3

	Ask students to say once again what the argument will do in the case of the movements? Answer: The number controls how many spaces to move in that direction.	Students raise their hand to provide an answer.
4	Add `paint('blue')`	
5	Ask students what they think the argument will do in the case of the paint icon? Answer: the argument controls what color the turtle will paint	5 Students raise their hand to provide an answer.
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	6 Students raise their hand to provide an answer.

changed to customize the output.	
7 Solve the warm up problem while narrating the steps out loud.	7 Students observe as the teacher demonstrates how to solve the problem using arguments.

CODING WITH ARGUMENTS

Length: 10 minutes

Students use arguments to solve coding challenges.

Prep:

- Distribute Lesson 7 | Worksheet 2

Teacher Actions	Student Actions
1 Individual work: Students work on the problems on [Lesson 7 | Worksheet 2] [worksheet2]. Remind students to use arguments to solve the problems more efficiently.	1 Students individually fill in the problems on their worksheet.