Table of Contents

getCoding

To run locally

1. Clone repository
2. Install dependencies

```
npm install -g gitbook-cli
npm install
```

    i. In the command line, navgitate to folder and serve.

```
gitbook serve
```

Coding Level 2

Lesson 1 - Sequencing Pixels
Unplugged

OVERVIEW

Students program Pixel Bots to paint, focusing on sequence.

OBJECTIVES

- Students will learn that computers run code in a sequence.
- Students will learn how to read, write, and execute code in a sequence.

AGENDA

Lesson Time: 45 mintues

1. Welcome to coding (10 minutes)
2. Predict pixel bot icons (15 minutes)
3. Explain sequence (10 minutes)
4. Read pixel bot sequence (10 minutes)

VOCAB

Sequence - The idea that statements must be performed in the order they are written.

MATERIALS

- Lesson 1 | Worksheet 1
- Lesson 1 | Worksheet 2

- Small turtle cutout for each student
- Magnetic turtle
- Scratch paper grids
- Pencils
- Whiteboard

WELCOME TO CODING

Length: 10 minutes

Introduce students to the world of coding and get them excited about its endless possibilities.

Prep: Queue up video http://tinyurl.com/q966xd5

Teacher Actions	Student Actions
1 Lead a discussion about coding and what it means to be a coder. Suggested script: `Starting with this class you ar e now coders. What do you think it means to be a coder? Where is code used in our world?`	1 Students raise their hands to give responses to the questions.
2 Chart student responses on the board.	
3 Fill in additional interesting uses for code on the board, such as autonomous cars, streetlights, music, etc.	
4 Watch video: A day in the life of a software engineer.	

PREDICT PIXEL BOT ICONS

Length: 15 minutes

Students individually predict the outcome of sequences and then regroup to discuss findings.

Prep: Distribute Lesson 1 | Worksheet 1

Teacher Actions	Student Actions
1 Tell students: Before we can write code, we need to learn how to read code	
2 Discuss the symbols at the top of Lesson 1 | Worksheet 1 and ask students to speculate about what they mean. Answer: • Up • Down • Right • Left • Paint	2 Students raise their hands to give answers.
3 Individual Work: Tell students to read the symbols on the worksheet and paint (color in)	3 Students work individually on their worksheet.

the correct square. While students are working on the worksheet, recreate the problems on the board.	
4 After they are finished, discuss the answers and how the students got to those answers. What is the difference between the two problems? Does the order of the icons matter?	4 Students raise their hands to give answers.
5 Students write in what each symbol means on their worksheets.	5 Students write in what each symbols means on their worksheet.

EXPLAIN SEQUENCE

Length: 10 minutes

Demonstrate how to read code by reading and stepping through three or four example programs.

Prep:

1. Draw a blank 3x3 grid on the whiteboard
2. Write a short (3 line) program on the whiteboard

Teacher Actions	Student Actions
1 Explain that when a computer executes code, it runs it in the order that it is written. This is called sequence.	
2 Point to the program on the whiteboard and ask students, "What is the first line of code?" After they answer, put a number 1 next to the corresponding line. Move the turtle according to the line of code just numbered.	2 Students raise their hands to answer questions.
3 Continue reading and stepping one line at a time. Trace the path of the turtle as it moves and shade in the squares whenever it paints.	
4 Show students three new examples (design these problems on the fly, making them interesting and complex enough), reading and stepping together as a class.	4 Students follow along and offer answer for what each action does.

READ PIXEL BOT ICONS

Length: 5 minutes

Students individually practice reading code.

Prep: Distribute Lesson 1 | Worksheet 2

Teacher Actions	Student Actions
1 Individual Work: Leave the worked example from the previous activity on the whiteboard. Ask students to individually fill out the worksheet. Remind students to trace the path of the turtle and to shade in squares whenever the turtle paints.	1 Students read the code, trace the pathway of the turtle, and paint the correct blocks on the worksheet.