



Module A3: PixelBots Intro to Coding

Scope & Sequence

Overview

In this module, students are introduced to sequencing and coding on a platform. They begin by reading code and following a list of code instructions. Then, they learn how to write code and run their code to see it in action. Finally, they learn how to debug simple bugs in code.

Goals

Computer Science

- **K-2.AP.12** Create programs with sequences of commands and simple loops, to express ideas or address a problem. (P5.2)
- **K-2.AP.16** Debug errors in an algorithm or program that includes sequences and simple loops. (P6.2)

Problem Solving

- **Gather - Noticing:** Use noticing as a strategy to collect relevant information to solve a problem.
- **Sequencing:** Sequence instructions in the order they should be executed when building solutions to problems.
- **Progress Checking:** Monitor a proposed solution through progress checking.

Self-Regulated Learning

- With guidance, monitor learning through verbal reflection.

Understandings

Students will understand that...

- problems can be solved systematically through a series of steps.
- solutions to problems can be recorded, shared and saved for later use.
- humans use computers to code solutions to solve a problem.
- debugging is an essential part of writing code.

Essential Questions

- How do you start to solve a problem?
- How do you write a solution to a problem on a computer?
- How do you fix a mistake in your code?

Knowledge

Students will know...

- commands can be used to give a computer directions.
- commands can be sequenced to complete a task.
- computers are machines that do things by following instructions.

Vocabulary

- **Sequence-** a set of things that happen in order

Skills

Students will be able to...

- follow a sequence of commands to complete a task.
- write a sequence of commands to complete a task.
- debug errors in code.



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- **Command**- individual lines of code
- **Computer**- a machine that does things by following instructions
- **Code**- instructions that tells a computer what to do
- **Bug**- a mistake in code
- **Debug**- find and fix mistakes in code

Assessments

Performance Tasks

- [Level Up Challenge](#)

Other Evidence

- [Lesson 01 Playlist](#)
- [Lesson 02 Playlist](#)
- [Lesson 03 Playlist](#)
- [Lesson 04 Playlist](#)
- [Lesson 05 Playlist](#)
- [Lesson 06 Playlist](#)
- [Lesson 07 Playlist](#)
- [Lesson 08 Playlist](#)
- [Lesson 09 Playlist](#)



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Lesson	Objective	Description	Concepts & Strategies
1 How to Train Your PixelBot	I can read a sequence of commands to complete a task.	In this lesson, students are introduced to reading code. The teacher models how to read code. Then, students practice reading code up to 5 lines.	Sequence
2 Reading More Code	I can read a sequence of commands to complete a task.	In this lesson, students continue to read code, but with slightly more complex code. The teacher models to read code on the board. Then, students practice reading code up to 4 lines.	Sequence
3 Writing Code	I can sequence commands to solve a problem.	In this lesson, students are introduced to writing code on a code editor. The teacher models writing code on the board. Then, students practice writing code up to 4 lines.	Sequence
4 Writing Code with Color	I can sequence commands to solve a problem.	In this lesson, students continue writing code on 9 Dots. The goals in this lesson requires students to practice changing the paint colors. The teacher models writing code. Then, students practice writing code up to 4 lines.	Sequence
5 Writing Longer Code	I can sequence commands to solve a problem.	In this lesson, students continue writing code on 9 Dots. The goals in this lesson require students to practice changing the paint colors. The teacher models writing code. Then, students practice writing longer code up to 10 lines.	Sequence
6 The First Bug	I can debug code to solve a problem.	In this lesson, students are introduced to debugging. The goals in this lesson require students to use the stepper tool to step through code, then delete one block of code. The teacher models how to debug code. Then, students practice debugging code up to 5 lines.	Sequence Debug
7 Wrong Way, PixelBot!	I can debug code to solve a problem.	In this lesson, students continue to practice debugging. Students use the stepper tool to step through code, then delete one block of code. The teacher models debugging code. Then, students practice debugging code up to 10 lines.	Sequence Debug
8 Writing and	I can sequence commands to	In this lesson, students practice writing code. The goals in this lesson	Sequence



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	Debugging	solve a problem.	require students to practice writing longer code while possibly debugging their own code. The teacher models writing code. Then, students practice writing code up to 9 lines.	Debug
9	Writing and Debugging, Part 2	I can sequence commands to solve a problem.	In this lesson, students continue to practice writing code. The goals in this lesson require students to practice writing longer code while possibly debugging their own code. The teacher models writing code. Then, students practice writing and debugging code up to 9 lines.	Sequence Debug
10	Level Up Challenge	I can sequence commands to solve a problem.	In this lesson, students show what they have learned in an independent activity called the Level Up Challenge. The Level Up Challenge is a cumulative assessment of all of the skills covered in the module. Students will write code up to 6 lines and debug code up to 8 lines.	Sequence Debug