

Unit 1 - Introduction to STEM and Coding

Content Area: **Technology**
Course(s): **Technology 5**
Time Period: **September**
Length: **7 Classes**
Status: **Published**

Unit Overview

This unit will take approximately 7 classes.

Vocabulary for this unit includes: algorithm, program, debug, loop, coding, and data.

Priority Standards

CS.3-5.8.1.5.AP.3	Create programs that include sequences, events, loops, and conditionals.
CS.3-5.8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

Essential Questions

- How can a partner assist me with improving my chances of success?
- How can breaking things into smaller steps help me?
- How can looping save time and reduce the chance of errors?
- How can organizing my work with the tools available help me improve my finished product?
- How does using the proper terminology assist me with learning coding?

Unit Learning Goals

- The student will be able to break down a long sequence of instructions into the largest repeatable sequence.
- The student will be able to create a basic computer program.
- The student will be able to demonstrate the difference between a growth or fixed mindset.
- The student will be able to modify an existing program to solve errors.
- The student will be able to order movement commands as sequential steps in a program.

Unit Learning Targets

- I can arrange commands in order, solve errors and create a repeatable sequence.

- I can utilize the skills and terms I've learned to solve various coding problems.
- I can create a basic computer program.
- I can sort and defend behaviors as to whether they are a growth or fixed mindset.

Marzano Elements

- Establishing & Acknowledging Adherence to Rules & Procedures
- Helping students examine their reasoning (DQ3)
- Helping students practice skills, strategies and processes (DQ3)
- Helping students record and represent knowledge (DQ2)
- Identifying critical information (DQ2)
- Previewing new content (DQ2)

Strategies for Differentiating Instruction

- Allow more advanced students to assist others with solving a code challenge.
- Allow more advanced students to continue to a higher course if needed.
- Assist students if they have been stuck at a problem for a significant amount of time (provide hints)
- Partner higher level students with lower functioning students
- Reassign students to a lower course 1 if needed (Courses A or B)

Unit Assessments (Required)

- Code.org Classic Maze <https://studio.code.org/hoc/1>

Unit Assessments (Optional)

- Fixed/Growth Mindset Assessment
- Vocabulary Assessment

Learning Goals / Targets / Plans

Class	Topic	Lesson / Activity	Standard / Learning Goal / Target
1	Introduction to STEM	Class introduction with review of Google Classroom, and Growth/Fixed Mindset	Standard: CS.3-5.8.2.5.ED.2 - Follow

			<p>solve a problem, using appropriate too</p> <p>Learning Goal: (SWBAT): demonstr</p> <p>Learning Target: I can sort and defer mindset.</p>
2	Introduction to Coding	Introduction to code.org	<p>Standard: CS.3-5.8.1.5.AP.3 - Create conditionals.</p> <p>Learning Goal(s): SWBAT: create a l</p> <p>Learning Target: I can create a basic</p>
3-6	Self-Guided Coding	Begin code.org unit - work at your own pace.	<p>Standard: CS.3-5.8.1.5.AP.3 - Create conditionals.</p> <p>Learning Goal: SWBAT:</p> <ul style="list-style-type: none"> • Order movement commands as • Modify an existing program to • Break down a long sequence o <p>Learning Target: I can arrange comm sequence.</p>
7	Coding Assessment	Administer coding unit test	<p>Standard: CS.3-5.8.1.5.AP.3 - Create conditionals.</p> <p>Learning Goal: SWBAT utilize learn</p> <p>Learning Target: I can utilize the ski problems.</p>

- 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.
- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 5 G A - Graph points on the coordinate plane to solve real-world and mathematical problems.
- 5 G B - Classify two-dimensional figures into categories based on their properties.

21st Century Themes

For this unit, students will work on the following 21st century themes:

- Apply appropriate academic and technical skills.
- Demonstrate creativity and innovation.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Use technology to enhance productivity.

Materials and Resources

[Google Classroom](#)

[Code.org](#)

[Google Cs-First](#)

[Coding Resources](#)