Unit 2 - Using Code to Program a Robot

Content Area:	Technology
Course(s):	Technology 5
Time Period:	December
Length:	10 Classes
Status:	Published

Unit Overview

This unit will take approximately 10 classes.

Vocabulary for this unit includes: Reinforcement of terms from Unit 1

riority Standards		
CS.3-5.8.1.5.AP.6	Develop programs using an iterative process, implement the program design, and test the	
CS 3-5 8 1 5 CS 1	program to ensure it works as intended. Model how computing devices connect to other components to form a system	

Essential Questions

- How can a prototype help me establish a design?
- How can does collaboration with my peers assist me in acheiving a goal?
- How can multiple components depend on each other to achieve a task?
- How can trial and error assist me with solving problems?

Unit Learning Goals

- SWBAT contruct a maze for their EV3 and program their robot to traverse it
- SWBAT create a maze for their EV3 based off of a prototype
- SWBAT describe the function of the components of a EV3
- SWBAT Join a robot to their Chromebook using Blu-tooth
- SWBAT send basic code to a robot utilizing Bu-tooth

Unit Learning Targets

- I can connect my robot to a Chromebook and send basic code to it.
- I can create and use a prototype to design and construct a maze for my EV3.
- I can describe and explain the function of the major components of an EV3 robot.

• I can program my robot to traverse my designed maze.

Marzano Elements

- Helping students elaborate on new content (DQ2)
- Helping students examining similarities and differences (DQ3)
- Helping students examining their reasoning (DQ3)
- Identifying critical content (DQ2)
- Reviewing content (DQ3)

Strategies for Differentiating Instruction

- Modeling and practice
- Advanced students to assist others (groupings as needed)
- One on one monitoring and conferences as needed
- Allow and encourage more or less complex mazes and programs based on students' abilities

Unit Assessments (Required)

• Assessment of maze including prototype, design and programming. (Complexity of design, originality and neatness of finished product)

Unit Assessments (Optional)

None

Learning Goals / Targets / Plans

Exploration of the components of an EV3	
Robot Learning Goal: S	-5.8.1.5.CS form a syste

				Learning Target : I can desc components of an EV3 robo
2				Standard: CS.3-5.8.1.5.AP, implement the program desi- intended.
	2	Introduction to EV3 Programming	Connection of EV3 by using Blutooth, practice programming robot with simple commands	Learning Goal: SWBAT 1 connect their robot to a PC (robot
				Learning Target : I can conto it.
3-5				Standard: CS.3-5.8.1.5.AP. implement the program designitended.
	3-5	Construction of Maze Mat	Plan and construct and design a mat/maze for an EV3 Robot	Learning Goal : SWBAT 1) 2) construct a maze for their E
			Learning Target: I can creat for my EV3.	
				Standard: CS.3-5.8.1.5.AP. implement the program designitended.
	6-10	Programming of EV3 Through Maze / Evaluation	Program the robot to traverse maze.	Learning Goal: SWBAT pr
				Learning Target: I can pros

Cross Curricular Connections

• 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.

• 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

- 5.NBT.C Perform operations with multi-digit whole numbers and with decimals to hundredths.
- 5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.

21st Century Themes

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

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP6. Demonstrate creativity and innovation.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11. Use technology to enhance productivity.

Materials and Resources

Google Classroom

EV3 Component Video

EV3 Mindstorms Software for Chromebooks

EV3 Lessons