Unit 1 - Introduction to STEM / Robotics

Content Area: **Technology**
Course(s): **Technology 4**
Time Period: **September**
Length: **10 Classes**
Status: **Published**

Unit Overview

This unit will take approximately 10 classes.

Vocabulary for this unit includes: input, output, algorithm, program, debug, loop, events, software, coding,, and data

Priority Standards

CS.3-5.8.1.5.AP.3	Create programs that include sequences, events, loops, and conditionals.
CS.3-5.8.1.5.AP.6	Develop programs using an iterative process, implement the program design, and test the program to ensure it works as intended.
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 model or prototype help in the development of a final product?
- How can creativity help to improve my final product?
- How can my mindset affect whether I achieve success?
- How does failure help us to achieve success?

Unit Learning Goals

- SWBAT create a physical medium for their robot to act out their story.
- SWBAT create a sort story that can be acted out by a robot.
- SWBAT demonstrate the difference between a growth or fixed mindset.
- SWBAT program a robot to act out a story.
- SWBAT utilize block coding to program a robot.
- SWBAT utilize color codes to program a robot while differentiating between input and output.

Unit Learning Targets

- I can create a setting for my robot and program my robot to act out my story.
- I can create a short story that can be acted out by my robot.
- I can sort and defend behaviors as to whether they are a growth or fixed mindset.
- I can utilize block coding to program a robot.
- I can utilize color codes to program a robot while differentiating between input and output.

Marzano Elements

- Establishing & Maintaining Effective Relationships in a Student Centered Classroom
- Helping Students Engage in Cognitively Complex Tasks
- Helping Students Examine Similarities & Differences
- Helping Students Examine their Reasoning
- Helping Students Practice Strategies, Skills, & Processes
- Helping Students Process New Content
- Helping Students Revise Knowledge
- Identifying Critical Content from the Standards
- Previewing New Content
- Providing Feedback & Celebrating Success
- Using Formative Assessment to Track Progress

Strategies for Differentiating Instruction

- Advanced students to assist others (groupings as needed)
- Allow and encourage more or less complex stories based on student ability.
- Independent practice with additional resources available
- Less advanced students can do a simpler pattern and/or more simple color/block codes.
- Modeling and practice
- More advenced students can explore the ozobot color/block codes and more advanced patterns.
- One on one monitoring and conferences as needed

Unit Assessments (Required)

- Story assessment
- Coding assessment
- Maze / board assessment

Unit Assessments (Optional)

None

Unit Learning Goals / Targets / Plans

Class	Topic	Lesson / Activity	Standard / Learning Goal / Target
1	Introduction to STEM	Growth / Fixed Mindset, class rules/procedures	**Standard**: **CS.3-5.8.2.5.ED.2 -** Collaborate with problem, and evaluate all possible solutions to pr models. **Learning Goal**: **(SWBAT):** demonstrate the diff **Learning Target**: I can sort and defend behavior
2	Introduction to coding / Robotics	Use color codes to program a robot.	**Standard**: **CS.3-5.8.1.5.AP.3 -** Create programs conditionals. **Learning Goal**: SWBAT utilize color codes to p and output. **Learning Target**: I can utilize color codes to pro output.
3	Coding Practice	Program a robot to play bowling.	**Standard**: **CS.3-5.8.1.5.AP.3 -** Create programs conditionals. **Learning Goal**: SWBAT utilize color codes to p and output. **Learning Target**: I can utilize color codes to pro output.
4	More Advanced Coding Practice	Utilizing block coding to program a robot	**Standard**: **CS.3-5.8.1.5.AP.6 -** Develop program design, and test the program to ensure it works as

			Learning Goal: SWBAT utilize block coding to **Learning Target**: I can utilize block coding to pr
5	Robot Stories	Write a short story for your robot to act out.	**Standard**: **CS.3-5.8.1.5.AP.3 -** Create programs conditionals. **Learning Goal**: SWBAT create a sort story that **Learning Target**: I can create a short story that c
6-10	Utiliing Robots to tell a Story	Design a setting and program a robot to act out your story.	**Standard**: **CS.3-5.8.1.5.AP.6 -** Develop program design, and test the program to ensure it works as **Learning Goal**: SWBAT 1) create a physical me a robot to act out a story. **Learning Target**: I can create a setting for my ro

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.
- 4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles.
- 4.MD.C Geometric measurement: understand concepts of angle and measure angles.
- LA.4.W.4.3 - Write narratives to develop real or imagined experiences or events using narrative technique, descriptive details, and clear event sequences.

21st Century Themes

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

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- 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.

- CRP12. Work productively in teams while using cultural global competence.

Materials and Resources

Google Drive

Google Classroom

Google Docs

How to Use Ozobot

How to use Ozoblocky

Ozoblocky

Ozobot.com

Ozobot Games