

# Unit 1 - Introduction to STEM / Robotics

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

## Unit Overview

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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

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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

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- 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

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- 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**

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- 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**

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- 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**

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- 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 advanced students can explore the ozobot color/block codes and more advanced patterns.
- One on one monitoring and conferences as needed

## **Unit Assessments (Required)**

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- Story assessment
- Coding assessment
- Maze / board assessment

## Unit Assessments (Optional)

None

## Unit Learning Goals / Targets / Plans

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

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

## Cross Curricular Connections

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- 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

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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**

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[Google Drive](#)

[Google Classroom](#)

[Google Docs](#)

[How to Use Ozobot](#)

[How to use Ozoblocky](#)

[Ozoblocky](#)

[Ozobot.com](#)

[Ozobot Games](#)