STEM Robotics
(10-12 days - 45 mins/day)

Authors
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SUBJECT/GRADE LEVEL
Subject Area(s) STEM
Grade Level(s) grades 6-8

Materials
Chromebook/tablet
Access to internet

STANDARDS

Next Generation Science Standards

- **MS-ETS1-1** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

Mathematics Standards | Common Core State Standards

- **7.G.A.1** Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
- **G.MG.A.2** Apply geometric methods to solve real world problems.

English Language Arts Standards | Common Core State

- **RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- **RST.6-8.8** Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

LESSON OBJECTIVE(S)
Students will research robotics and use a variety of tools (infographics, EdPuzzle, Gimkit, sketchnotes) to present their findings.

CAREER CONNECTION(S)

Mentor Background: Rabih Jabbour is a research chemist at DEVCOM Chemical Biological Center in Aberdeen Proving Ground, Maryland. His focus is on proteomics of biological threat agents using analytical chemistry technologies

STEM Careers: Roboticist, Engineering, Researcher, Graphic Designer

ENGAGEMENT

Brief Description: Watching a dancing robotics video introducing Boston Dynamics and reflecting via class discussion.

Procedures: Day 1

- Do You Love Me? = 6 minutes
- What do you notice? What do you wonder? Use Padlet to have students post their noticings and wonderings. If teacher prefers no digital divides, then have students write on Post-its. Each student will share and post their noticings and wonderings. 10 minutes
- Find examples and add to padlet. Respect each other's work. = 15 minutes
- Each student must add at least 3 images, no repeats, and label with a sticky note or text box

EXPLORATION

Brief Description: Students will learn about infographics. They will explore the Google Site for the project and decide if they'd like to work alone or with a partner. They will choose videos and articles to explore. They will create sketchnotes, Edpuzzles, or Google Forms to prove they watched videos and read articles.

Procedures: Days 1-3

Day 1: Share infographic example, discuss project, visit Google Site, decide on partner or work alone
Day 2-3: Watch playlist of robotic videos : choose 4 videos (create either sketchnote or create an EdPuzzle for each video chosen)
Day 1-3: EdPuzzle creation knowledge checks or sketchnote notes after each video segment.
Day 1-3: Read articles with examples of robotics - sketchnote to prove
Day 3: Turn in sketchnotes or completed EdPuzzles

EXPLANATION

Brief Description: Students will check their understanding using Gimkit. They will then choose their favorite robot, investigate the robot's impact on our world and future, collect and curate information into a Google Sheet, then create an infographic to explain their findings.

Procedures: Days 4-12

Day 4&5: Use Gimkit to check for robotic concept understanding: Types of Robots Gimkit; Robotics Gimkit
Day 5: Choose the robot they want to research Add to Google Sheet bank.
Day 5 -7: Research examples of everyday robotics
Day 7-10: Use Google Slides, Adobe Spark, or Piktochart to create an infographic that shows findings

Day 10-12: Present and publish infographic on Google Form

ELABORATION

Brief Description: STEM is a class for everyone. Students will range in ability thus allowing for reach (if you finish early) activities.

Procedures:

Extra growth activities:

▶️Watch the attached videos.
🔗Visit the attached links.
➕Go to our Flipgrid and answer the 3 Robotic Discussion questions.
🗣This time around on Flipgrid, you must comment on at least two classmates' posts.
✅The rubric explains how you will be graded.

☝ TIPS on commenting -
Agree or disagree with them and give support to your feelings. For example: "I think you're right because I read an article about that." or "No, I think that's not correct because I think this..."
You can also give them feedback. For example: "That's true! I never would've thought of that." or "I was thinking the same thing! Great minds think alike!"
Another way to respond is to build off of someone's post. For example, "That made me think of this..."
You can ask the original poster a question as well. For example, "Do you think that will happen soon?" 😊

https://www.bostondynamics.com/
https://builtin.com/robotics/robotics-companies-roundup
https://www.youtube.com/watch?v=Jky9I1ihAkg
https://flipgrid.com/a11df2f8
https://www.youtube.com/watch?v=fn3KWM1kuAw
https://www.youtube.com/watch?v=klpbY7pwYF4

Robot Shapegram

https://www.youtube.com/watch?v=QHoPuwgN3XQ
https://docs.google.com/drawings/d/1Hf9BxZ5UDIYcswyTHEBrno0K7BHcmvW6ltie36Hia_g/edit?usp=sharing

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🤖What Do We Use Robots For?

📖Read through the section. Click on pictures - they flip! Click on orange words!
💪🏿Work on your own or with a partner to complete the slide deck presentation.

What do we use Robotics For?
Types of Robots Jamboard
Robotics Slides

🧩 Edpuzzle - How Boston Dynamics Is Building Its Robot Empire

https://edpuzzle.com/media/62702109ec54c142dc9a43c7

EVALUATION

Brief Description: Rubric, sketchnotes, EdPuzzles/Google Form creation, Infographic presentation

Procedures:

Students will be evaluated on the entire process in formative ways listed above and summatively through their infographic presentation.