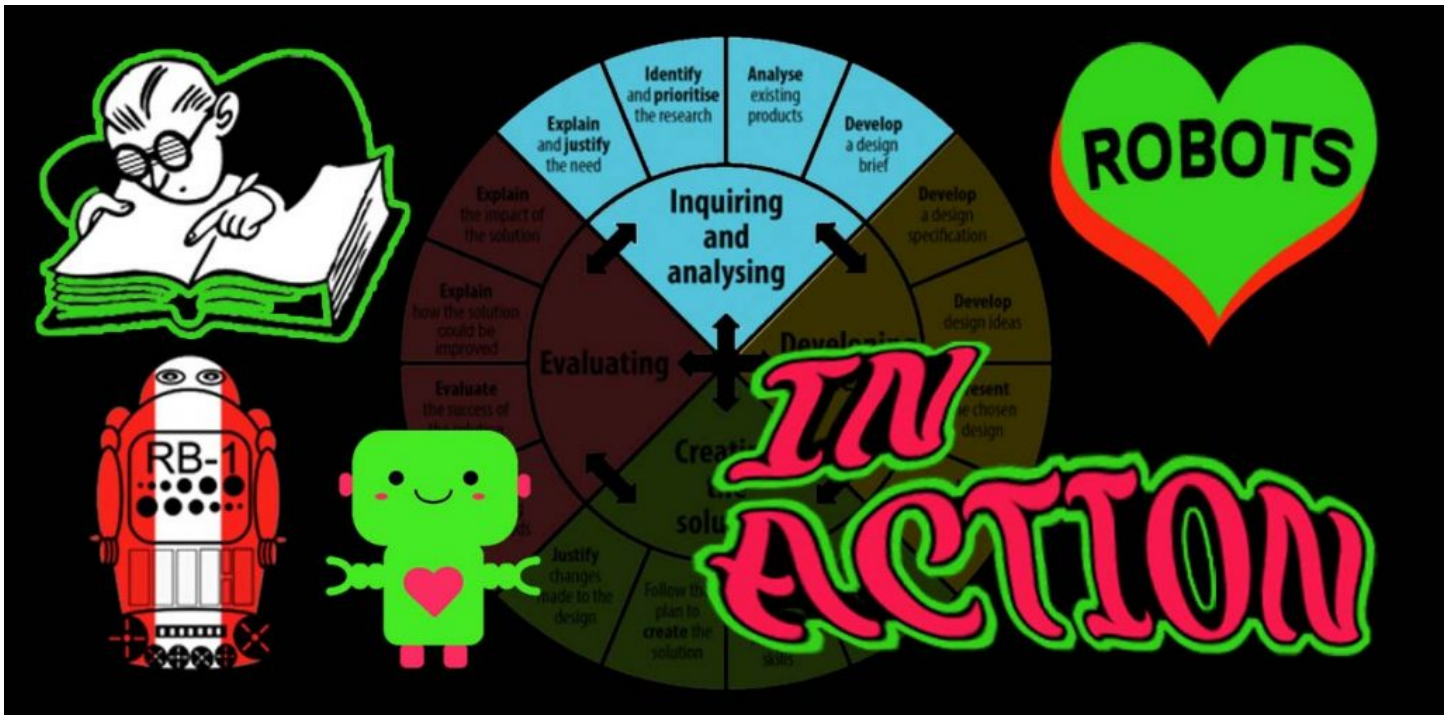
Robots in Action

Criterion A - Inquiring and Analyzing

Students define and research a problem to be solved according to the needs of a specific audience.



A.1 - Explain and Justify the Need

Explain and justify the need for a solution to a problem for a specified client/end-user.

A.1.1 - What is the problem to be solved? Most of your answer should come from the GRASPS and be in your own words.
A.1.2 - What is one possible solution to the problem? State an idea that solves the problem as defined in the GRASPS.
A.1.3 - Why does the problem need to be solved? That is, why is a solution needed? Connect your answer to the GRASPS.

A.1.4 - Could a robot help you solve problems--even the problem in the GRASPS? Ask a chatbot a few questions related to the GRASPS to get an idea. Check out this example with award-winning Mitsuku. Try a chat with Kuki or ChatGPT to research how to solve the problem. Note: This may be a class chat moderated by your teacher. Insert a screenshot of your conversation or paste it below. If this step isn't possible, write notes below about the chat.
A.1.5 - How helpful was your chat with an AI? Explain in 3 to 4 sentences.

A.2 - Identify and Prioritize the Research

Identify and prioritize the primary and secondary research needed to develop a solution to the problem.

Answer the factual, conceptual, and debatable questions. Review the Help Resources as needed.
A.2.1 - Factual Questions - Answer both questions: a. What different jobs can robots do? b. What major parts do most robots have?
a.
b.
A.2.2 - Conceptual Questions - Answer only one question: a. How does the form of a robot relate to its function? b. How does the form of a robot relate to the environment in which it operates?
a.
b.
A.2.3 - Debatable Question: Why do robots need to help humans in empathetic ways?

A.3 - Analyze Existing Products

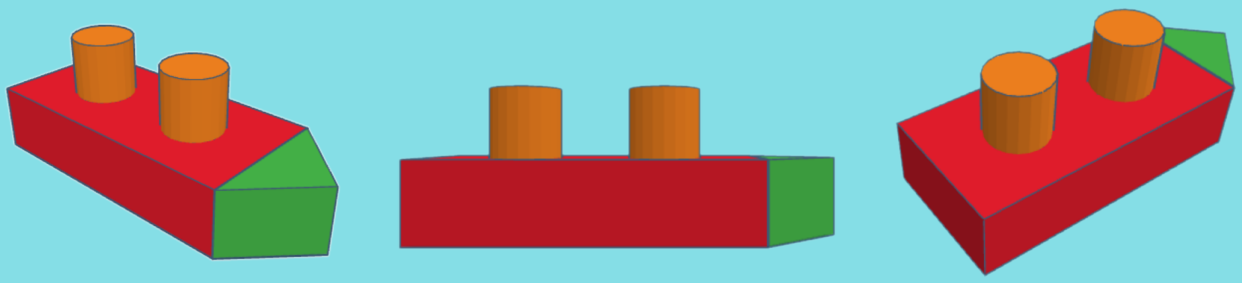
Analyze a range of existing products that inspire a solution to the problem.

Before answering the questions, review the video What is a Robot? (6:19).
A.3.1 - The Toy Train - Review the Train and Robot Arm (loop animation). What do you observe most: a) artificial human, b) programmable machine, or c) sensing/thinking/acting? Ties between a, b, or c, or "none of these" are acceptable answers. Explain in 3 to 4 sentences.
A.3.2 - The Artist - Review DIY Robot Artist movie (3:11; has music). What do you observe most: a) artificial human, b) programmable machine, or c) sensing/thinking/acting? Ties between a, b, or c, or "none of these" are acceptable answers. Explain in 3 to 4 sentences.
A.3.3 - On the Ground - How does the function of this robotic system (0:38) relate to the environment in which it operates? Explain in 3 to 4 sentences.
A.3.4 - In the Sky - How does the function of this robotic system (1:19) relate to the environment in which it is supposed to operate? Explain in 3 to 4 sentences.

A.3.5 - Humanoid Robot - Use the Help Resources to review some of the current robots in our world that can inspire your design ideas. Which robot looks humanoid and why?	
Insert a Screenshot.	
Explain why this robot looks humanoid.	
A.3.6 - Primary Purpose Robot - Use the Help Resources to review some of the current robots in our world that can inspire your design ideas. Which robot looks like its primary purpose and why?	
Insert a Screenshot.	
Explain why this robot looks like its primary purpose.	

A.3.7 - Tinkercad Design Practice - Simple Boat Examine the three views of the Tinkercad boat. Duplicate it and insert two screenshots. Use the help

resources as needed.



A.3.7.1 - Tinkercad Boat Screenshot I:

A.3.7.2 - Tinkercad Boat Screenshot II:

A.3.8 - TinkerCad Design Practice - Robot Humanoid Head
Pick one of the seven robots and recreate a version of its head with Tinkercad's basic shapes. Make the head more humanoid than its current design. The seven robot choices are 1, 2, 3, 4, 5, 6, and 7. Use the help resources as needed.

A.3.8.1 - Actual Robot Screenshot (from one of the seven examples):

A.3.8.2 - Tinkercad Robot Humanoid Head:

A.4 - Develop a Design Brief

Develop a general design summary from an analysis of the relevant information to guide and inspire the designer.

A futurist and visual designer, summarize your vision for an empathetic robot prototype to help the people in Lima, Peru. Specifically, based on what you're thinking right now, write:

- what you are going to make
- why you are going to make it
- who is it for

Create this design brief in the form of an email to the city government of Lima.

A.4.1 - Design Brief - Email Subject Line:

A.4.2 - Design Brief - Email Body: