Lesson Title: Recycled Robot Challenge

Standards Addressed: PA Science and Technology and Engineering Education Standards:3.5

Real-World Problem: Robots help with challenging jobs; they can assist and simplify your home life.

What skills will students use or learn? Define a Problem. Develop Possible Solution. Plan and Carryout the Solution.

Objective(s): Students' will design and create a new idea for a helpful robot out of recycled materials they have at home.

Materials or Resources Needed: Any recyclables (cereal and food boxes, paper towel and toilet paper rolls, plastic drink and food containers, etc.) craft materials, tin foil, old electronics and mechanisms

Instructional Procedures/Learning Tasks (grades K-5):	List Questions for Higher-Order Thinking (Webb's DOK) that students could process throughout (optional):
Question: What problem would you like your robot to help with? Brainstorm task ideas. Plan: Draw a picture (prototype) of what your robot might look like and how you can use the recycled materials. Create: Build your robot out of the recycled materials. Improve: Test out your robot and look for ways to make the design better.	Can you demonstrate how your robot would help with a task?

Instructional Procedures/Learning Tasks (grades 6-8):	List Questions for Higher-Order Thinking (Webb's DOK) that students could process throughout (optional):
Question: What problem would you like your robot to help with? Brainstorm ideas for tasks. **Plan: Draw a prototype of what your robot might look like and how you can use the recycled materials in the solution.** **Create: Build your robot out of the recycled materials following your prototype.** **Improve: Test out your robot and look for ways to make the design better.**	**Can you demonstrate how your robot would help with a task?** **How would you evaluate the success of your robot solution? What might you change and why?**
Instructional Procedures/Learning Tasks (grades 9-12):	**List Questions for Higher-Order Thinking (Webb's DOK) that students could process throughout (optional):**
Question: What problem would you like your robot to help with? Brainstorm ideas for tasks. **Plan: Draw a prototype of what your robot might look like and how you can use the recycled electronics/mechanisms in the solution.** **Create: Build your robot out of the recycled electronics/mechanisms following your prototype.** **Improve: Test out your robot and look for ways to make the design better.**	**Can you demonstrate how your robot would help with a task?** **How would you evaluate the success of your robot solution? What might you change and why?**

Content Extension

Mathematics: Prototype measurements from your plan. Compare and contrast with the dimensions of the final robot creation.
Science: Research current robot helpers being developed.

Social Studies: Try out Google Expeditions for a robot field trip.
English: Read or listen to a book about robots. Write a story about your robot or a poem.
Other:

Student Reflection (optional):

1. Describe how you could improve your robot design?
2. Explain why you chose your idea for your robot's task to be of help?
3. Did your design influence the recycled materials you used, or did the found materials influence your design?