Robots to the Rescue!

Objectives
- Students will build a simple robot that can perform a simple task
- Students will write a description of their robot and its function

Grade Level
Second - Third

Subjects
Space Sciences
Language Arts
Engineering (building robots)

Timeline
60 - 90 minutes (or three lessons of 30 minutes each)

Background Information
To be successful in this unit, students will need to know the definition of a robot. Though students will formulate their own ideas about robots and their functions, a simple definition of a robot is a machine that performs a complex and often repetitive task. Students may also imply that robots take on human form and that they are controlled by humans or remote control.

Secondly, students will learn the vocabulary word End Effector. An end effector is a tool at the end of a robotic arm that performs a specific task. Students will be creating robots with special end effectors designed to perform a task within the classroom.

Materials
Sammy and the Robots
Chart Paper
Markers
K-nex toys
Legos
Popsicle sticks
Brads
Miscellaneous craft items (paper towel rolls, paper plates, paper clips, etc.)
Lesson
1. Vocabulary
   Robot - A machine or device that operates automatically or by remote control. A mechanical device that sometimes resembles a human and is capable of performing a variety of often complex human tasks on command or by being programmed in advance.
   Endeffector - A device or tool connected to the end of a robot arm.
2. Read students the book *Sammy and the Robots*. It is about a boy whose grandmother goes to the hospital and he builds a robot to help her while she is sick.
3. After reading the book, assemble students into small groups of 3-4. Give them a piece of chart paper and have them make a list of what they think of when they think about robots. Prompt them to include what they do, how they do it, and why they do it.
4. Allow groups to share their thoughts. After each group has shared, use common ideas to create a class definition of a robot.
5. Present the students with a problem similar to Sammy’s. Tell students that the teacher is sick and that she needs their help. Have groups work together to build a robot to help the teacher perform a task within the classroom. Each robot must have a special end effector to perform their task.
6. Provide a variety of materials for the students to use when building their robots. While some students will prefer to use commercial kits such as K-nex and Legos, encourage students to use common items such as popsicle sticks, straws, paper clips, paper towel rolls, and the like.
7. Give students ample time to work on building their robots.
8. Have each student write a description of their robot and its function. Groups may work together, but each student should have their own description.
9. Allow students to share their robots with the class. Each group must demonstrate the task that their robot is designed to perform.

Extensions
1. Have students write stories similar to *Sammy and the Robots*. Instruct them to write about an adventure that a robot might have.
2. Students may write stories entitled, *If I Had a Robot* listing the things they could do if they had a robot of their own.

Evaluation
- Students did build a simple robot that can perform a simple task
- Students did write a description of their robot and its function
- Students will be evaluated on the successful completion of a task by their robots.
- Students can be evaluated on their written descriptions of their robots.
Resources