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Lesson Plans

Lesson Plan Survey

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Lesson Focus

Develop a robot arm using common materials. Students will explore design, construction, teamwork, and materials selection and use. Note: This lesson plan is designed for classroom use only, with supervision by a teacher familiar with electrical and electronic concepts.



Lesson Synopsis

Participating teams of three or four students are provided with a bag including the materials listed below. Each team must use the materials to design and build a working robot arm. The robot arm must be at least 18 inches in length and be able to pick up an empty Styrofoam cup. Teams of students must agree on a design for the robot arm and identify what materials will be used. Students will draw a sketch of their agreed upon design prior to construction. Resulting robot arms are then tested and checked for range of motion and satisfaction of the given criteria.

Age Levels: 8-18

Objectives

- Learn design concepts.
- Learn teamwork.
- Learn problem solving techniques.
- Learn about simple machines.

Anticipated Learner Outcomes

- design concepts
 - teamwork needed in the design process
 - impact of technology in manufacturing
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Lesson Activities

Students design and build a working robotic arm from a set of everyday items with a goal of having the arm be able to pick up a Styrofoam cup. Working in teams of three or four students, the students explore effective teamwork skills while learning simple robot mechanics.

Resources/Materials

- 3" wide and approx. 22" long strips of cardboard-- 5 or so
- Binder clips (different sizes)-- 8 or more
- Brads-- @10
- Clothespins-- 6
- Craft sticks--10-15
- Fishing line-- 3-4 feet
- Hangers-- 1 or 2
- Paper clips (diff. Sizes)-- 10-15
- Pencils-- 3-4
- Rubber bands (different sizes)--15
- Tape-- clear and masking (partial rolls should be fine)
- Twine-- 3-4 feet
- Various size scraps of cardboard-- 10 assorted

Alignment to Curriculum Frameworks

Curriculum alignment sheet is included in [PDF](#).

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