Super Engineers

→Build your Own Robotic Arm!
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You are a member of a team of three or four students, all working together to design and build a robot arm out of the materials listed below. The robot arm must be at least 45cms long and be able to pick up an empty paper cup. Your team must agree on the best design and decide what materials to use to build it. Your team must make a sketch of the design before you actually build it.

There is no “right” or “wrong” answer to this problem. Your design will be unique and will most probably take a lot of practice to make it work – Good Luck!

Materials:

- 5 x long strips of cardboard
- 6 x clothes pegs
- 1 meter of fishing wire
- 2 clothes hangers
- 15 paper clips
- 4 pencils
- 15 rubber bands
- Roll of masking tape
- 1 meter of string
- 15 craft sticks
- Assorted cardboard shapes
- 1 x paper cup
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- Did you use all the materials provided to you? Why, or why not?

- Which item was the most critical (important) to your robot arm design?

- How did working in a team help the design process?

- What were the not so good aspects of working in a team?

- Name three industries that could use robots in manufacturing (to make things)?
Background Information
Explores the concepts of simple machines and how the design process needs teamwork. Covers curriculum areas include:
Science KS1, 2 & 3 – Forces and Motion
Science KS3 & 4 – Transfer of Energy
DT KS1, 2, 3 & 4 - Developing, planning and communicating ideas

Procedure
1. Divide your class into teams of 3 or 4 students and provide the student activity cards and materials.
2. Instruct the students to examine the materials and work as a team to design and build a robot arm out of the materials. The robot arm must be at least 45cms and pick up an empty paper cup.
3. Student should draw a sketch of their design before they attempt to build it.
4. Explain that teamwork is essential and that there is no “right” answer to the problem.
   (Time needed one to two 45 min sessions)

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Resources
- Student Activity Cards
- One set of materials for each team:
  - 5 x long strips of cardboard
  - 6 x clothes pegs
  - 1 meter of fishing wire
  - 2 clothes hangers
  - 15 paper clips
  - 4 pencils
  - 15 rubber bands
  - Roll of masking tape
  - 1 meter of string
  - 15 craft sticks
  - Assorted cardboard shapes
  - 1 x paper cup

Organisers
Handy Hints

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