

Creating an Automaton

Instructions for students

Simple machines include levers, inclined planes, pulleys, wheels and axles, and screws. With them, humankind has been able to create electric motors and computers. Before these inventions, however, there was a time when simple mechanics ruled.

During the age of mechanics, machines called *automata* were made up of surprisingly complex engines that mirrored various behaviours. Their motion was driven by cranks and gears and coding was done with cams and followers. Some interesting examples of automata can be found on [Exploratorium](#).

This week, why not give a “hand” to health care workers and applaud them for their work during this most difficult time. Your task is to create your own **automaton** (using materials found around the home) that mimics clapping hands. Before producing it, though, remember the design process.

- 1) Design your automaton – A simple design plan will go a long way.
 - What does my automaton need to do?
 - What motion transformation or motion transmission systems will I use?
 - Does my automaton require guiding controls?
 - What about its reversibility?
 - What constraints do I have?
- 2) Do a little research
- 3) Collect your materials – What materials do you have accessible?
- 4) Plan – Now that you have a basic idea of what needs to happen and what materials you have, refine your design.
- 5) Create – Go forth and build.
- 6) Test and evaluate your creation:
 - Am I happy with my final product?
 - Can I improve it? If so, how?

Now clap away!

Investigate further

If automata and steampunk culture is of interest to you, why not . . .

- read some great steampunk books that feature automata? You may wish to check out:
 - A Clockwork Angel Series by Cassandra Clare
 - Cinder by Marissa Meyer
 - Leviathan by Scott Westerfeld
 - The Invention of Hugo Cabret by Brian Selznick

(Virtually) the [Mechanical Art & Design \(MAD\) Museum](#) located in Stratford-upon-Avon in England. It houses a great collection of automata.

Materials required

- Suggested consumable materials (will depend on availability around the home):
 - cardboard, thick card stock, pencils, dowels, push pins, straws
- Suggested equipment (will depend on availability around the home):
 - cutting mat, cutting implements (utility knife, scissors etc.), adhesives (glue, tape etc.), ruler

Information for parents

About the activity

Children should:

- build their own automaton with simple materials found around the home. Safety is always paramount and therefore great care and caution should be taken when working with glue guns and utility knives.

Parents could:

- focus on safety (students may use utility knives, hot glue guns etc.).
- encourage children to think outside the box when it comes to possible materials to be used.