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**Craft Stick Kinetics** 

Theo Jansen's "Strandbeest" sculptures seem complicated, but are based on a simple mechanism

## (art + science; art + engineering)

"Kinetic art" is an umbrella term applied to art that contains perceivable movement. Although it applies to many forms of art, it is most often associated with moving sculpture.

Artists have always been inventors, and many artists within the last century or so have looked to machines for inspiration in their art. Swiss artist Jean Tinguely was drawn to machines, but not precise ones. His sculptures were playfully animated from scrap metal and "junk" items. Some of his art machines were built to generate their own art, which he called "Métamatic" sculptures.

Contemporary Dutch artist Theo Jansen's large-scale "Strandbeest" sculptures have amazed viewers worldwide as they appear to walk across sandy beaches. A fusion of art and engineering, they resemble living, skeletal animals and are built of connected PVC rods that are spurred to movement by wind currents.

While kinetic art can appear amazingly complex, it is often a series of repeating movements caused by a simple mechanism that make them so impressive.

In this lesson, students will create a simple structure of notched, wooden sticks that move on joined pivot points, known as fulcrums. Much like a pantagraph or scissor mechanism, it can collapse and expand with hand pressure. On top of the structure, students can add enhancements like shapes and images that move with the sticks and transform the structure into kinetic art that is playful and intriguing.

**GRADES 3-12** Note: Instructions and materials are based upon a class size of 24 students. Adjust as needed.

#### Process

- Place two Smart Sticks on top one another and wrap Plastiband loosely around one end to join, and secure in the notched areas. Move the unsecured ends apart slightly to form a "V" and wrap band again around each short end until slack is taken in the band (it doesn't need to be tight). See image (A).
- Repeat step 1 with two more sticks, then join the two "V" shapes in the same way so that it forms a diamond shape that looks like (B).
- 3. This is the basic shape. Now, add at least two more sticks to the ends to form "handles" to create the movement with. More sticks can be added to make the structure taller or wider, if desired. Test the structure by moving the handles in and out.





### Materials (required)

Chenille Kraft Smart Sticks, box of 1000 (60407-1000); a minimum of four sticks per student

Plastibands, small, box of 200 assorted colors (61411-1002); share one box across class

Roylco Double Color Cardstock, package of 100 sheets, 8" x 9", assorted colors (12611-1000); share one package across class

Aleene's Quick Dry Tacky Glue, 4 oz (23884-1104); share one bottle between two students

Officemate Paper Clips, package of 200, 1", style 3 (57354-1001); four clips per student

#### Materials (optional):

Acco Binder Clips, small, box of 12 (57330-3034)

Ribbon Assortment, 40 yds (62100-1040)









Process, continued

- 4. Plan a series of shapes to go on top of the structure. These can be the same shape repeated again and again, or different shapes. They can be representational or just shapes.
- 5. Lay the structure flat. Decide where to place the first shape, then apply tacky glue to the corresponding Smart Stick and attach. Use binder clips or paper clips to hold that shape in place while moving onto the next one.
- After the first shape, each shape will need to be placed and secured temporarily with a paper clip while the structure is tested. Shapes cannot block each other or the movement of the structure. Once a shape's position is tested and works, glue it in place.

Some things to keep in mind while constructing the Kinetic piece:

- Shapes can be a variety of sizes and colors, but keeping within a color theme or shape theme will create the most pleasing unity.
- Shapes can be placed symmetrically or asymmetrically on the structure.
- Shapes can be attached to the front or back side.
- Shapes can be glued to one another and not on the structure, as long as they don't cause interference.
- Shapes dont have to lie flat. The can be bent, folded, or curled.
- 7. Frequently adjust cardstock pieces as they bend or sag.

#### Option

- Besides cardstock, many other materials could be used to make an interesting kinetic piece, including yarn, ribbons, fabric, feathers, etc. Try experimenting!

#### National Core Arts Standards - Visual Arts

#### Creating

Anchor Standard 1: Generate and conceptualize artistic ideas and work. Anchor Standard 2: Organize and develop artistic ideas and work. Anchor Standard 3: Refine and complete artistic work.

**Step 1:** Secure two Smart Sticks together, and then two more. Join together in a diamond-shape and add handles.



**Step 2:** Cut a shape from cardstock and glue it in place. Secure with a clip temporarily.



**Step 3:** Continue adding shapes and check the placement of each one to make sure it doesn't interfere with movement before gluing it down.

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