

Lesson/Unit Title: Art in Motion: Kinetic Sculpture

Grade Level(s): Middle (6th-9th grade)

Duration: Multi-day (multi-week) Unit



Big Idea/Unit Overview:

Artists experiment to uncover new possibilities.

Objectives/Outcomes:

Learners will:

- Collaboratively utilize the design process – identify the problem , brainstorm possibilities, choose a direction, construct a prototype, test and record data, revise and refine model.
- Experiment with materials to collaboratively create a three-dimensional work of art that can move in some way (i.e. kinetic sculpture).
- Present their findings to one other small group of peers, accepting input for revisions before refining the model.

Materials:

A selection of any of the following – be sure to have enough of whatever materials you choose so that the students have enough for revisions: pipe cleaners, wire, cardboard, yarn, string, gears, nuts, bolts, spools, dowels, wood pieces, popsicle sticks, clothespins, brass brads, pulleys, skewers, toothpicks, foam core, Styrofoam, paper, foil, straws, twist ties, Model Magic, modeling clay, or Play Dough, found objects – natural or manufactured, paper clips, rubber bands, corks, anything the students decide to use adapt, duct tape,

Possible tools: scissors, wire cutters, glue gun, hot glue, wood glue, hole punch, needle nose pliers, pliers, clamps, buckets, squirt bottles

Resources (websites, videos, images, books, etc.): n/a

Procedure:

Introduction - Start by showing images or videos of kinetic sculptures to engage students. Ask students some of the following questions:

- What do you see?
- What do you think about it?
- What do you wonder?
- How do you think the artist made the artwork?
- Where do you think they got the idea?
- What do you think the artist used?
- What is causing it to move?
- What question would you ask the maker?

Design Process Intro

Problem Identification:

- Explain that students will be using the design process to create a collaborative kinetic sculpture.
- Introduce the steps of the design process (share attached handout).
- Explain the process of documenting, collecting, and presenting data (in a process book).
- Ask students how they may have used this process before, in any subject area.
- Engage students in a discussion about results – what happens if something is different than you planned for?

Brainstorming – explore possibilities and choose a direction:

- Students will break into teams that they will collaborate with to create a kinetic sculpture.
- They will discuss possible solutions for designing a sculpture that can move via force, wind air, gravity, or water.
- As a group, students will generate a minimum of 3 sketches descriptions of kinetic sculptures.
- Teams will select one idea to construct as a prototype.
- Students will add their brainstorming ideas to their group process book.

Construct prototype:

- Using the available materials, students will construct a prototype based on their selection. Test and record data: Students will experiment with their model, investigating its ability or inability to move.
- They will record their findings (i.e. photo documentation, sketches, notes, audio recording, or video).
- Students will add their data to their group process book.

Present to small group:

- Students will discuss their findings with one other team and share feedback regarding possible revisions.

Revise refine model:

- Based on feedback and data collection, students will revise and refine their artworks.
- They will also reflect on their original expected outcomes versus real life outcome. What worked? What didn't? Why not? What changes might you propose to make it work? Students will add their revision ideas to their group process book.

Assessment:

We created a rubric for the various aspects of the lesson: brainstorming and planning, prototype and testing, redesign, and the group process book. Additionally, students conducted a reflective peer review.

Reflective Peer Interview: Students will interview a peer from another team and record their responses to the following questions:

1. Did you discover anything unusual or special while you were working?
2. How did your design change as you were working?
3. When things went right, how did you know?
4. Is there still something you would like to change? Why or why not? They co-created a rubric about the softskills working in teams.

They wrote an small essay about patent law, philanthropy, personal philanthropy, and personal observations. They did self and peer evaluations of the final products in all their diversity. They included anecdotal observations and feedback.

Standards:

	Grades 6-8
<p>NATIONAL CORE ARTS STANDARDS (NCAS): <i>Visual Art</i></p>	<p>VA:Cr1.1.6a: Combine concepts collaboratively to generate innovative ideas for creating art. VA:Cr1.1.8a: Document early stages of the creative process visually and or verbally in traditional or new media. VA:Cr2.1.6a: Demonstrate openness in trying new ideas, materials, methods, and approaches in making works of art and design. VA:Cr2.1.7a: Demonstrate persistence in developing skills with various materials, methods, and approaches in creating works of art or design. VA:Cr3.1.6a: Apply relevant criteria to examine, reflect on, and plan revisions for a work of art or design in progress. VA:Re9.1.6a: Develop and apply relevant criteria to evaluate a work of art. VA:Re9.1.8a: Create a convincing and logical argument to support an evaluation of art. California Visual Art Standards: VA8:1.4 Use artistic terms when describing the intent and content of works of art. VA6:2.4 Create increasingly complex original works of art reflecting personal choices and increased technical skill. VA6:4.4 Change, edit, or revise their works of art after a critique, articulating reasons for their changes. VA7:4.4 Develop and apply specific and appropriate criteria individually or in groups to assess and critique works of art.</p>
<p>ENGLISH LANGUAGE ARTS COMMON CORE STANDARDS (CCSS):</p>	<p>Listening: Engage effectively in a range of collaborative discussions (one-on- one, in groups, and teacher- led) with diverse partners on grade 6 – 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.</p>
<p>NEXTGEN SCIENCE STANDARDS (NGSS): <i>(list crosscutting concept)</i></p>	<p>MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. MS-ETS1-4. Develop a model to generate data for iterative testing</p>