BUFFALO AKG ART MUSEUM

Lesson: Kinetic Art Mobiles

Alexander Calder (American, 1898–1976). *The Cone*, 1960. Painted metal. 100 x 110 x 65 inches (254 x 279.4 x 165.1 cm). Collection Buffalo AKG Art Museum. Gift of Seymour H. Knox, Jr., 1961 (K1961:24). © Calder Foundation / Artists Rights Society (ARS), New York

Artists: Alexander Calder

Period/Movement:

Grade Level: K–12

Enduring Understanding 2.1:

Artists and designers experiment with forms, structures, materials, concepts, media, and artmaking approaches.

Essential Questions:

How do artists and designers find a particular direction that is effective for their work? How do artists and designers learn from trial and error?

LESSON

Conceptual Basis:

With a degree in mechanical engineering and a passion for the arts, Alexander Calder experimented with Kinetic art through the creation of two different types of sculpture: the mobile and the stabile. Composed of delicately balanced components that respond to air currents, Calder's mobiles are graceful and poised. In contrast, stabiles are non-moving sculptures. The Cone, 1960, combines elements of mobile and stabile sculptures. This lesson is inspired by the mobile art of Alexander Calder and the theory of kinetic energy, with a focus on the principles of balance and movement.

Objectives:

Become familiar with the artist Alexander Calder and his mobiles.

- Discover Kinetic art, including mobiles and stabiles.
- Increase awareness of recycling for the purposes of art.
- Support the understanding of basic art elements and principles.

Create a hanging mobile with a focus on shapes and balance.In addition to using wood and casts of her own body, Marisol is known for using found objects and various other materials. She was interested in the ideas of other artists but ultimately always did her own thing.

ACTIVITY

Creative Exercise:

The creation of interdisciplinary ties between art and science is achievable in this lesson. All moving things have kinetic energy, or the energy possessed by an object due to its motion or movement. Kinetic energy is captured in a mobile. As air currents blow around the mobile, the different elements of the work will move. It is for this reason that mobiles are often referred to as a type of Kinetic art.

For a hands-on activity based on kinetics, you can demonstrate different ways wind can create kinetic energy in objects or how air can create movement in different objects. Having students interact with materials such as paper fans, sailboats, party favors that unroll when you blow into them, kites, and flags can help them understand kinetic energy.

Artmaking Activity

Begin the activity by having students cut shapes out of construction paper. Encourage students to cut different sizes for their mobile to experiment with balance. Creating more shapes than needed (six to eight) will help students experiment with balance during the artmaking section of the activity. You can tailor the lesson to include geometric or organic shapes and a variety of paper colors. Once students have cut their shapes, distribute sticks (younger students) or wire (older students) for their mobiles.

For younger students, the sticks will hang horizontally on the mobile. The largest stick will serve as the base of the mobile. Tie one piece of string in the middle of the base stick. This will be the hanging string when the project is completed. Tie a string around the middle of each smaller stick. Attach one of the smaller sticks to one side of the large base stick, leaving about six inches of string between the two. Attach another smaller stick to the other side of the base stick. You can encourage students to adjust the length of the string between the sticks for variety in their mobiles. For added difficulty, add additional hanging sticks off of the smaller sticks for more detailed mobiles.

Once the structure of the mobiles is set, have students punch one hole toward the top of each of their shapes. Students should tie string through the holes in their paper shapes and attach the strings to the sticks. Working with a partner can be beneficial during this stage of the artmaking process as students experiment with creating balance in their mobiles. Encourage students to test different shapes and weight combinations on each stick to achieve balance. When the sticks all hang horizontally when the mobile is held up by the base stick's string, balance has been achieved. Mobiles can be displayed hanging all around the school!

For older students, pass out three pieces of wire cut to the same length. The longer the wire, the larger the mobiles will be. Have students bend a small loop at the end of each wire using pliers. The loops should all face the same direction. These loops will serve as the horizontal hanging arms of their mobiles. Using pliers, hold one piece of the wire in the middle. Wrap the wire around the pliers to create a loop set in the center of the wire. Repeat with the other two pieces of wire. These loops will enable students to connect the mobile pieces. To have students experiment more with balance, try placing the connecting loops off center for a greater challenge and more visual interest.

To create the skeleton of the mobile, set one of the wires on a flat surface (this will be the top tier). Take another wire and attach its center loop to the right loop of the first wire using a jump ring. Then, take the third wire and attach its center loop to the right loop of the second wire using another jump ring. Tie string to the center loop on the top tier. This string will allow the mobile to hang. (See: Teacher Example)

Once the skeletons of the mobiles are created, students should attach their different hanging shapes to their skeletons. Have students punch one hole toward the top of each of their shapes. With string, attach one shape to each of the empty remaining loops on the wire skeleton. You can encourage students to adjust the length of the string between the shapes for variety in their mobiles. Encourage students to test different shapes and weight combinations on each wire to achieve balance. If the wires all hang horizontally when the mobile is held up by the base wire's string, balance has been achieved. Students can even bend the wire to create unique shapes in their mobiles. Mobiles can be displayed hanging all around the school!

Lesson Tips

- Creating specific shapes based on themes can help tailor this lesson to a variety of disciplines.
- If you do not have a hole puncher, have students create two identical shapes for each mobile shape addition, then glue the string between the shapes to attach that section onto the mobile.
- Adding designs on the shapes of the mobile can add detail and variety.
- Students can add pictures or adjectives about themselves to create a work that is representational and personal.
- Instead of using plain colored construction paper, try using colored sheets of transparent plastic for a "sun catcher" appearance.
- To create a stabile-mobile, older students can sculpt stabiles using clay. Their mobiles can be connected to their stabiles rather than hung.
- If you do not have jump rings, create your own using small pieces of wire.

Optional Reflections and Lesson Wrap-Up

Alexander Calder said, "To most people who look at a mobile, it's no more than a series of flat objects that move. To a few, though, it may be poetry." Have your students think about the shapes, colors, balance, and movement they have experienced through their sculptures. What do all of these things remind them of? Have them write poems about what the sculptures remind them of or make them think about.

Materials:

Scissors
Pencils
Rulers
Hole puncher
Thin string
Construction paper
Medium-thickness wire (older student project)
Metal jewelry jump rings (older student project)
Small pliers (older student project)
Sticks (younger grade project)

Vocabulary:

kinetic art: art composed of balanced or suspended components that move in response to air currents or motor power

mobile sculpture: moving sculpture

stabile sculpture: non-moving sculpture

balance: principle of art—feeling of equal distribution of weight in an artwork

movement: principle of art—the appearance of motion in an artwork

New York State Standards:

Grade	Code	Standard
1	VA:Cr2.1.1	Explore uses of materials and rools to create works of art or design.
2	VA:Cr2.1.2	Experiment with various materials to explore personal interests in a work of art or design.
3	VA:Cr2.1.3	Create artwork using a variety of artistic processes and materials.
4	VA:Cr2.1.4	Explore and invent artmaking techniques and approaches.
5	VA:Cr2.1.5	Experiment and develop skills in multiple artmaking approaches through practice.

6	VA:Cr2.1.6	Demonstrate openness in trying new ideas, materials, methods, and artmaking approaches in making works of art and design.
7	VA:Cr2.1.7	Demonstrate persistence in developing skills with various materials, methods, and artmaking approaches in creating works of art or design.
8	VA:Cr2.1.8	Experiment, innovate, and take risks to pursue ideas, forms, and meanings that emerge in the process of artmaking or designing.

Standards:

The New York State Visual Arts Standards for High School Students are divided into 3 categories, Proficient, Accomplished, and Advanced rather than by grade level. Please feel free to choose the standard that best applies to the needs of your students and class curriculum.

Grade Level 9-12	Code	Standard
Proficient	VA:Cr2.1.HSI	Generate and develop artistic work in a self-directed manner.
Accomplished	VA:Cr2.1.HSII	Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
Advanced	VA:Cr2.1.HSIII	Experiment, plan, and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.

Interdisciplinary Connections: Science, Engineering
Teacher Example:

Example of finished artwork based on lesson plan.
Artwork by former School Program Coordinator Kelly Macagnone.