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Donald W. Reynolds Center for the Visual Arts
E.L. Wiegand Gallery

160 West Liberty Street, Reno, Nevada, 89501
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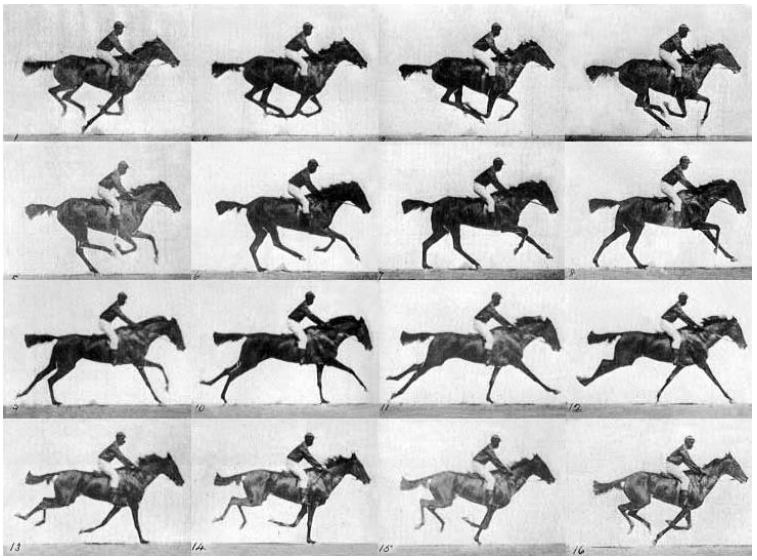
The History of the Moving Image

Art Lab

GRADE: 9-12



STANDARDS

The following lesson has been aligned with high school standards but can easily be adapted to lower grades.

ART: VA:Cr1.2.IIa: Choose from a range of materials and methods of traditional and contemporary artistic practices to plan works of art and design.

SCIENCE: Connections to Nature of Science – Science is a Human Endeavor: Technological advances have influenced the progress of science and science has influenced advances in technology.

OBJECTIVE

Students will be able to explore the influence of advancements of moving imagery by planning and creating works of art with both traditional and contemporary methods.

VOCABULARY

Zoetrope: a 19th century optical toy consisting of a cylinder with a series of pictures on the inner surface that, when viewed through slits with the cylinder rotating, give an impression of continuous motion.

Thaumatrope: a popular 19th century toy. A disk with a picture on each side is attached to two pieces of string (or a dowel). When the strings are twirled quickly between the fingers the two pictures appear to blend into one due to the persistence of vision.

Persistence of Vision: refers to the optical illusion whereby multiple discrete images blend into a single image in the human mind. The optical phenomenon is believed to be the explanation for motion perception in cinema and animated films.

MATERIALS

Thaumatrope:

- Card stock
- String/Dowels
- Markers
- Example thaumatrope

Flip Book:

- Precut small paper rectangles
- Binder clips
- Pencils
- Markers
- Construction paper
- Light table (optional)
- Example flip book

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Zoetrope:

- 8 in. circular base (e.g. foam board)
- Black poster board equal in length to the circumference of the circular base (25.13 in.)
- White drawing paper equal in length to the circumference of the circular base (25.13 in.)
- Scissors
- Pencils
- Markers (black and colors)
- Erasers
- Cutting mats
- Rulers (long and short)
- Marbles
- Glue (glue guns or other fast drying glue)
- Light table (optional)
- Example zoetrope

Graphics Interchange Format Animation:

- App enabled device with digital camera
- GIF App: GIF Maker by Momento; GIF Maker by Brain Craft; ImgPlay by ImgBase

TIME: 2 Hours

LESSON:

ENGAGEMENT:

Present students with *Sallie Gardner at a Gallop* (1878), also known as *The Horse in Motion.* Allow the class to discuss and share what they see.

How did Eadweard Muybridge create this moving image? What technology might have been used?

What is animation?

How has animation and moving image technology changed over time and how has it impacted society?

Discuss how animation is the illusion of motion resulting from the speedy display of an image sequence. Our visual perception of an object briefly remains after it has disappeared from view, creating an optical illusion known as "persistence of vision." When observed in rapid succession, slight variances between pictorial frames merge into a seamless impression of movement.

Background ideas: *As far back as the Paleolithic period, humans experimented artistically with the illusion of motion. Paintings in the cave complexes of Lascaux and Chauvet-Pont-d'Arc, in southern France, appear to portray the natural movement of animals through sequential progressions and multi-layered poses. With the flickering tool of firelight, these works might well have been brought to life.*

Leaping to the Victorian era, pioneer of animation locomotion, Eadweard Muybridge, pushed the limits of photographic technology to capture, for the first time, the intricate motions of a running horse. To present his groundbreaking work, the photographer and inventor proceeded to create a device, known as a zoopraxiscope, to project the photographic series as a short early motion picture. Inspired by the work of artists and scientists at this time, mass-produced optical toys became immensely popular. Innocently preempting later historic developments in the art of cinema, the zoetrope, thaumatrope, and even simple flip books offered audiences an opportunity to entertain themselves with animated images.

EXPLORATION:

Introduce students to the prepared examples of animation devices and allow them to play with and discuss each one.

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Ask the students how they think each moving image technology works and discuss the mechanical movements of the example images.

How many images or frames are needed to create each animation? How quickly must the device be moved or manipulated to play realistically?

If they could create an animation of their own, what story would they tell and which of the animation machines would they use?

What, if any, are the limitations to each of the machines? What are the advantages?

Introduce the art project to the students. Explain that they will be using a range of different tools and techniques to create their own optical illusion animation devices. The students will work to create the moving image devices in order of complexity. Starting with the thaumatrope, they will proceed to the flip book, then zoetrope and finally a digital GIF maker. Each device in the progression will require slightly more instruction and forethought.

EXPLANATION:

1. Thaumatrope

   Cut a card disk and, on each side, draw a simple unique image. The images should relate to one another so that, when animated, the two merge to create a themed optical composition. Attach the disk to a dowel or string and spin it rapidly. The persistence of vision will cause the two separate sides to merge.

2. Flip Book

   Draw a page-by-page progression of a simple, slowly variating image. Bind the pages in chronological order on one side with a binder clip (you can also purchase pre-made flipbooks). Rapidly fan through the pages to animate the series.

3. Zoetrope

   Students will need to create the foam circle base (8 inch diameter) for their zoetrope. Have the students use a compass or pre-cut template for this step. Instruct the students to find the circumference of their circular base ($C=2\pi r$; $C=25.13$ in.). This measurement will dictate the length of both the black poster board cuff and white paper animation strip insert. The white

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animation strip will be half the height of the black poster board cuff.

The length of both the cuff and animation strip will need to be divided into a minimum of twelve equal sections (make one cut every inch for a total of 25 cuts). At each division line on the black poster board, cut a small slit of paper (approximately 1/8th inch wide and a quarter of the cuff's height). These slits will create a break for the eye to see the moving animation within the rotating cuff. A small hole will need to be cut in the center of the circular base. This hole will hold the marble, allowing the zoetrope to spin like a top on a flat surface. Once the paper is cut and ready, the students should glue the black poster board cuff around the circular base. The viewing slits should be positioned at the top of the cuff.

With the zoetrope made, students can start brainstorming their animation strip. What is the best way to achieve a smoothly transitioning animation? Explain to the students that small but clear variances between each frame will create a more fluid illusion of movement (e.g. a bouncing ball). Have the students plan their animation strip in pencil before finalizing the design with markers. This is a great time to test the zoetrope. Slide the animation strip inside the black poster board cuff – positioning it toward the base. Give the zoetrope a spin. After a quick test, students can return to completing or embellishing their designs.

ELABORATION:

Today, the animated image is commonplace. What are some of the modern technological tools we might use to easily create, view, and manipulate moving imagery?

How do these tools and technologies impact our daily lives?

Why do we record or replicate the world around us through animation?

Have students download animated GIF makers onto a app enabled device. Each GIF maker will come with its own tutorial and directions for use.

Background ideas: *It is interesting to consider that the toys presented in today's class heralded the emergence of cinematography. Today, the same fundamental mechanics of animation has progressed from film to television to videogames to virtual reality. The interdisciplinary nature of such inventions is inherent, while their multidisciplinary impact on society seems immeasurable. From the flickering of cave walls to the beaming projections of modern cinema, the desire to animate the stories of the world has long been a catalyst for innovation and design.*

EVALUATION:

Allow the students to share their creations with their neighbors and the class.

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Which of the optical devices offered the most seamless portrayal of motion? Why might this be?

Which of the drawn designs offered the most enjoyable animation? Why might this be?

How did the method of making the moving images change over time?

What technology had to be invented in order for moving images to evolve?

How could these devices be improved upon or modernized with new technology?

EXTENSION:

1. Set students the task of trouble-shooting and honing their designs at home or challenge them with creating a different animation machine like the phenakistoscope, zoopraxiscope, or praxinoscope.

2. Modernize the lesson by challenging students to photograph a series of frames and loop them together in an animated GIF format.

3. Consider presenting an art lesson on stop motion animation.