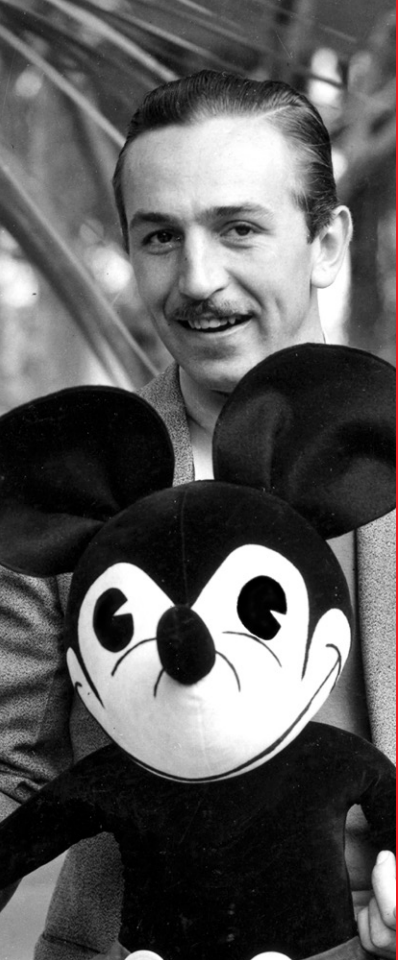


# STEAM GUIDE

STUDENT SELF-GUIDE

THE WALT  
DISNEY  
FAMILY  
MUSEUM



**W**ELCOME TO THE WALT DISNEY FAMILY MUSEUM, where you will journey through the life of Walt Disney with the help of this STEAM guide. **STEAM stands for Science, Technology, Engineering, Art, and Math.** You will see that Walt used STEAM in many ways throughout his career—from building the Happiest Place on Earth to creating films that touched the heart. As you walk through our museum, imagine yourself working alongside Walt. You'll see some of Walt's STEAM-based innovations and learn how Walt overcame failure to build a legacy that has inspired others to pursue their dreams.

Walt with Mickey doll, ca. 1932; courtesy of the Walt Disney Archives Photo Library, © Disney



### SCIENCE:

*A search for the general laws about how the world works.*  
Scientists are curious and investigate the world around them.



### TECHNOLOGY:

*The inventions, systems, tools, or methods used to solve real-world problems.*  
Technologists are technology specialists in their chosen field.



### ENGINEERING:

*Using scientific or mathematical knowledge to solve practical problems.*  
Engineers are both imaginative and practical.



### ART:

*The creation of things that are meant to be expressive or meaningful.*  
Artists are skilled and creative.



### MATH:

*The study of numbers, amounts, shapes, and the relationships between them.*  
Mathematicians are precise problem solvers using numbers.

**To find the answers for each question, explore the galleries. Discover how Walt found solutions to problems that stood in his way.**

## 1901–1923 BEGINNINGS AND ADVENTURE

Walk through the first two galleries to discover Walt's early attempts at animation. Find the cartoons located on the monitor in the back gallery and see how different they are from today's animation.

**Why did Walt's Laugh-O-gram cartoons fail?**  
**Board the elevator hear his views on failure.**



Walt Disney sitting at a drawing desk, c. 1920; collection of the Walt Disney Family Foundation

## 1923–1932 FROM FAILURE TO SUCCESS

Welcome to Hollywood!  
As you exit the elevator, find the *Alice Comedies* and observe the posters and film clips.

After watching the monitors,  
find the cameras in the gallery.

**How do you think Walt used  
STEAM to place a real girl  
in a cartoon world?**





Move on to the next gallery to find Oswald the Lucky Rabbit. After losing the legal rights to Oswald, Walt created Mickey Mouse.

**Locate the earliest known drawing of Mickey and consider how he is different from today's version. Draw the main differences below.**



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Move over to the wall covered with pictures from *Steamboat Willie*. **Estimate how many pictures of hand-drawn frames are on the wall and how many seconds of film this total represents.**

\_\_\_\_\_ ESTIMATED FRAMES

\_\_\_\_\_ ESTIMATED SECONDS

Now use your math skills to figure out how many pictures Walt and his animators needed to draw the eight-minute *Steamboat Willie* cartoon. *Hint: it took 24 frames to make 1 second of film.*

**60 SECONDS X \_\_\_\_\_ FRAMES PER SECOND (FPS)**

**= \_\_\_\_\_ FRAMES PER MINUTE**

**\_\_\_\_\_ FRAMES PER MINUTE X 8 MINUTES**

**= \_\_\_\_\_ FRAMES IN 8 MINUTES OF FILM**



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## 1932—1939 GOLDEN ERA OF THE WALT DISNEY STUDIOS

With the success of Mickey Mouse, Walt was able to diversify his cartoons. The *Silly Symphonies* became a testing ground for the Studios that led to unprecedented success.

In the next gallery, study the exhibits for the *Silly Symphonies*.  
**Find each of the display cases for the short films below and list a corresponding innovation:**

***FLOWERS AND TREES*** (1932)

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***THREE LITTLE PIGS*** (1933)

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***THE OLD MILL*** (1937)

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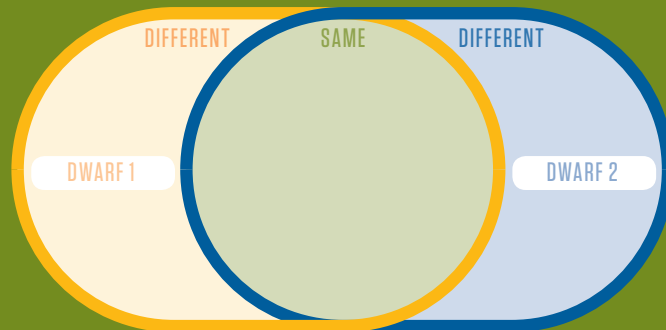


Walk over to the next gallery to experience Walt's magical interpretation of *Snow White and the Seven Dwarfs*.

Look for the animation cels of the Seven Dwarfs, the dwarf figurines, and the video of Walt explaining their characteristics.

**Pick two dwarfs and complete the diagram below to see how they look similar or unique.**

*Hint: Think about the dwarfs' names.*



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## 1939—1945 HARD TIMES AND INNOVATION

After the success of *Snow White and the Seven Dwarfs*, Walt built a new studio in Burbank.

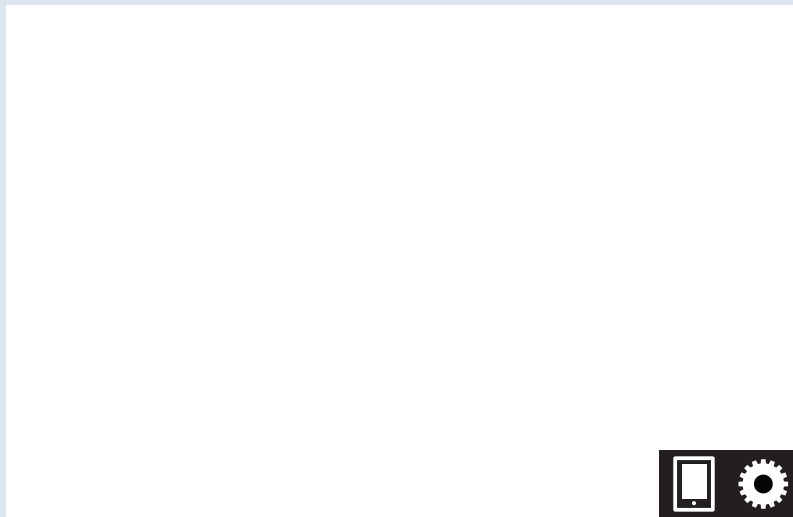
To learn more about animation at The Walt Disney Studios, take a look at the animator's desk on the right, just after the *Pinocchio* case.

Walk further into the gallery to find the Multiplane Camera. Imagine you are teamed up with animator Ub Iwerks.

Iwerks (pronounced EYE-works) was a prominent Disney animator and engineer who assisted the Studios in developing innovative ways to tell stories through film, such as the camera in front of you. Study this camera.



**How would you and Iwerks develop a technology that makes 2D painted scenery appear 3D?**



After answering, pick up the handset to listen to Walt's explanation.

To learn more about The Walt Disney Studios, take a look at the digital copy of the Schultheis Notebook on the left, between the *Fantasia* display case and film screen.



As you turn the corner, learn about how many of the animators at the Studios went on strike and how the Studios later supported America's efforts in World War II.



**How did Walt's views on failure help him to endure these tough times?**

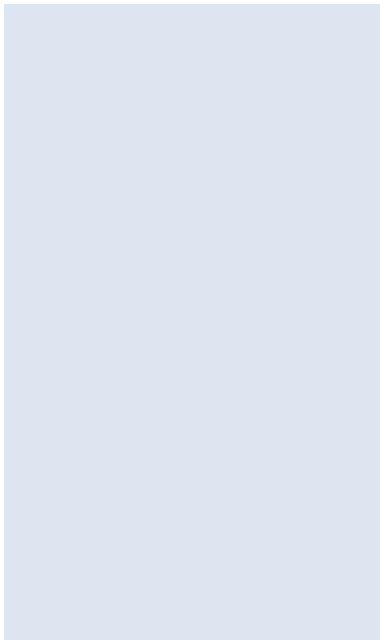


Photo by Herman Schultheis, Camera Department Process Lab Notebook page 32, 1939; collection of the Walt Disney Family Foundation.

## 1946—1953 IMAGINATION

After World War II, Walt continued to innovate and create new ways to tell stories. He brought adventures to audiences through live-action films and warmed hearts with enchanting animated fairy tales. Enter the next gallery with the film ribbon around the ceiling.

For an animator, it is important to make a character—a person, animal, or other creature—feel believable. To accomplish this, animators study anatomy, physics, and motion to replicate reality in cartoon form. This practice is known as the *physics of animation*.

**Find one of the four interactive stations in the room, or observe the reel on the film ribbon around the ceiling, and look for an example of character animation.**

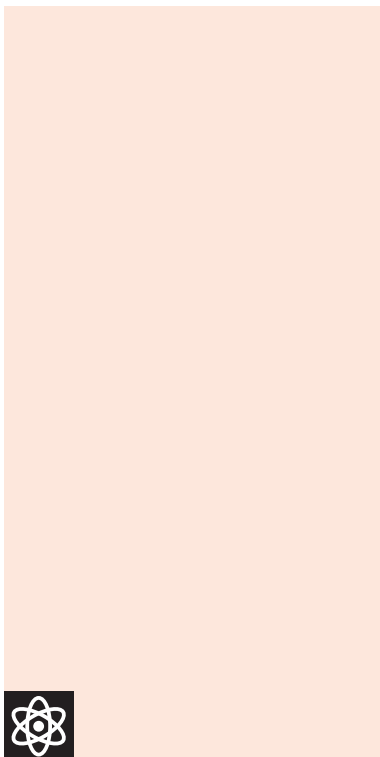
*Hint: Scan the touch screen for the play symbol (>) to identify examples of videos as opposed to still images. Many are located under the category *The Nine Old Men*.*



**Think like a scientist.**

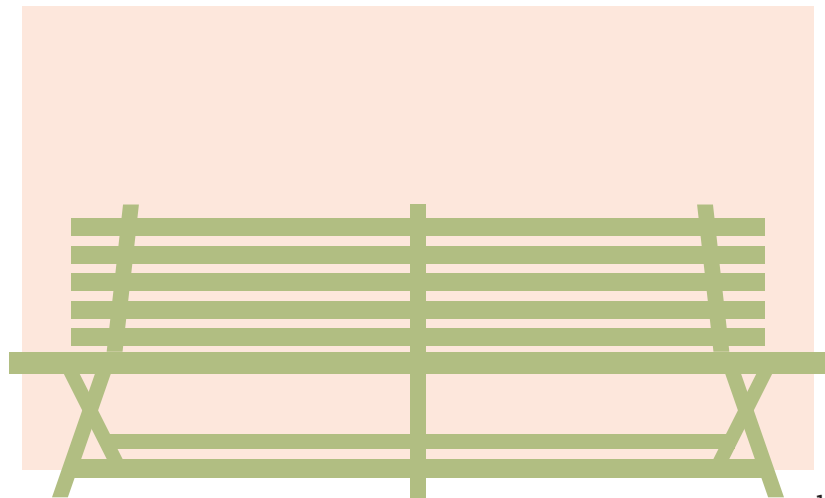
**Describe how the characters  
you found move.**

**Do they appear lifelike,  
whimsical, or both?  
Explain your answer.**



Peter Pan and José Carioca © Disney

Pass through the next gallery to reach a glass wall with a view of the Golden Gate Bridge. Find the green bench at the end of the wall and have a seat — this bench originated from Griffith Park, where Walt would take his daughters to ride the merry-go-round. In our galleries, it represents where Walt dreamt up Disneyland. **Think about something great *you* would like to accomplish one day. Write your answer in the bench illustration below.**





## 1953—1965

# VISION TO REALITY

Imagine it is 1953 and Walt has shared with you his idea for a theme park that would be fun for the entire family.

Find the blue panel that says W.E.D. Enterprises.



Walt used STEAM concepts to create entertaining attractions for the whole family. He blended elements from the past, present, and future—along with fantasy—to enhance guest experiences at Disneyland. He was also interested in transportation.

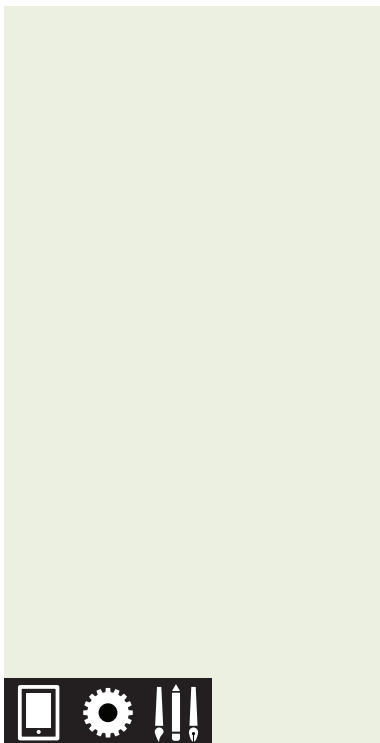
**Find attractions in the model that serve as examples of transportation. Then draw a futuristic transport that you believe Walt would have wanted in his theme park.**



To create attractions at both Disneyland and the 1963/64 World's Fair in New York, Walt hired people who would later be known as Imagineers. They created a new way to tell stories through a technological and engineering marvel called Audio-Animatronics® technology. Find Pepe, Alice Davis and Mary Blair's "*it's a small world*," and Walt's childhood hero, Abraham Lincoln.

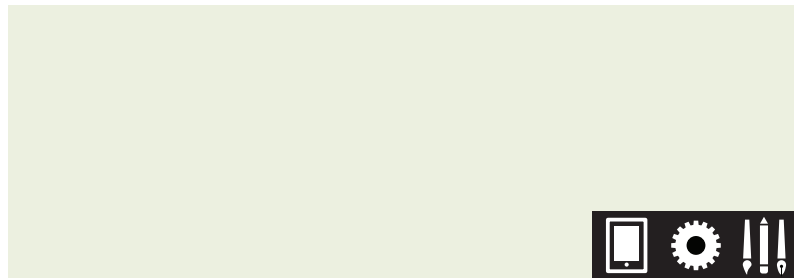
After browsing the gallery, test your knowledge.

**What is an Imagineer?**  
Consider the two words that make-up the term *Imagineer*.

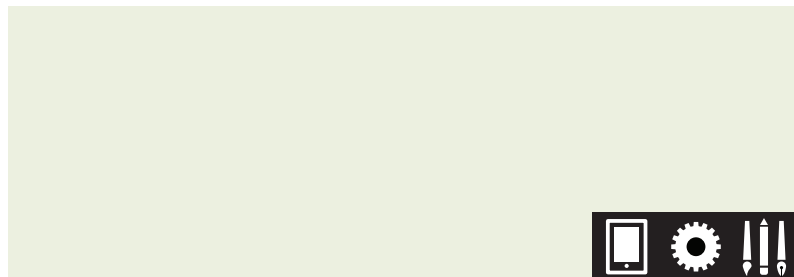


**What does Audio-Animatronics mean?**

Consider what three words are used to make the larger term.



**What story would you use Audio-Animatronics technology to tell? Why?**



## 1966 LEGACY

Continue on to the next gallery. In the last room before you exit, you will see a large white couch. Sit down, watch the videos, and reflect on your journey through Walt's life.

From the beginning of his career to the end of his life, Walt used STEAM to create and explore.

**Write down one word that would describe Walt Disney's career.**

**Walt changed the world while pursuing his dreams, and in the process he found a way to overcome every problem that stood in his way. We hope we have inspired you to use STEAM to do the same.**



Above: Photo of Walt and Mickey Mouse dolls, ca. 1930; courtesy of the Walt Disney Archives Photo Library, gift of Diane Disney Miller, © Disney. Top right: Walt Disney with Donald Duck, 1954; collection of Walt Disney Family Foundation, © Disney. Bottom right: Walt Disney with Academy Award® publicity photo, 1954; collection of the Walt Disney Family Foundation, © Disney © Academy of Motion Picture Arts and Sciences

## ONGOING OPPORTUNITIES FOR STUDENTS

The Walt Disney Family Museum promotes the artistic legacy of Walt Disney through classes, workshops, and professional mentoring. Our studio programs foster creativity and innovation by providing students with the opportunity to learn, practice, and perfect skills essential to the cinematic arts. Scholarships are available for students with exceptional skills, interest, or financial need.

### **STUDIO CLASSES**

Dive deep into animation with multi-day classes and intensives for students of all ages and levels of expertise. Studio classes are designed to showcase fundamental principles of art, design, and animation, as well as the tangible benefits of a supportive, creative environment supervised by teaching animators and industry professionals.



### **AFTER-SCHOOL ANIMATION**

Successful animators have a comprehensive understanding of basic animation techniques and principles. This eight-week course focuses on one of these concepts each session. Budding animators can develop a strong foundation, continue to build knowledge of art and animation, and hone unique skills. This course is for beginners who want to explore the basics of animation.

### **SUMMER CLASSES**

Be prepared to rethink and reimagine ideas and designs as you learn what it takes to be an animator. Summer classes culminate in a screening in the museum's theater of all final projects for family and friends. Participants will take home a portfolio, a digital copy of all works, a DVD compilation, and an appreciation for art and animation.

**Learn more at**  
[waltdisney.org/education/studio-programs](http://waltdisney.org/education/studio-programs)



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