



Educator's Guide



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Introduction to the Exhibit

Hall of Heroes brings guests into the world of superheroes, crime-fighters, gadgets, and spies through an immersive experience. As visitors enter the *Hall of Heroes* they immediately find themselves in the thick of the action as they begin their journey through several themed environments. Learn the circumstances that create superheroes, discover the ideals that heroes uphold, and push the boundaries as to what it truly means to be heroic.

The exhibit features as a full-scale “half” replica of Barris Kustoms’ 1960’s Batmobile, as well as other movie props, replicas, and rare artifacts from past and present major motion pictures and television shows. Interactive display cases will take guests through a history of heroes and how people relate to them, from radio to pop culture, including everything from blockbuster films to large-scale comic conventions. The *Hall of Heroes* exhibit is truly a place to “Discover Your Superpowers!”

The *Hall of Heroes* Educator’s Guide has been developed as a resource for educators to use before and after their visit, as well as to enhance the visit itself. It provides an introduction to the content of the exhibit and provides information on how to incorporate inquiry-based instruction within and across curricula.

The Guide is divided into several sections, as follows:

- The Exhibition Themes & Orientation section includes a brief overview of each exhibit within *Hall of Heroes*.
- The Curriculum Connections section outlines how the exhibition correlates to the Next Generation and Kansas Science Standards.



- The remaining sections include activities that can be used to prepare for a visit and/or continue the themes of the exhibition post-visit. These sections also include prompts and activities to engage students at a deeper level during their visit.

What to Expect

During your visit, your students will:

- Learn about the four major elements of super powers and examples that can be found in everyday life.
- Learn how the arts and popular culture have influenced the introduction and evolution of superheroes over the past 70 years.
- Explore ideas and concepts through a variety of interactive displays and exhibits

When you leave the exhibition, your students will understand how:

- History and current events have, and continue to, inspire the creation and evolution of superheroes
- The uses and capabilities of the four elements of super powers are being tested and developed for real-world application and use
- Science and imagination are necessary and will continue to help us advance and shape our future reality.

General Safety & Guidelines

- Students should be supervised at all times.
- Some areas have higher than normal sound levels.
- Some exhibits use flashing lights
- No food or beverage allowed inside the exhibition
- Cameras are allowed and encouraged as there are several photo opportunities



Exhibition Themes & Orientation

As you move through the exhibition, you will find displays and interactive stations grouped thematically. Exhibit features include:

- Wind Tunnel – A blast to the senses
- Magnet Racers – Speed challenge
- Combo Memory Game – Powers of the mind
- True/False Game – Challenging and fun
- Touch Path Game – Tests agility
- Laser Lab – A touch of James Bond
- Bomb Defuse/Speed Test – Can you do it in time?
- Stop Game – Reflexes are key
- Super Balance Challenge – Will you lose your cool?
- Grip Strength – Heroic or not quite?
- Step Around – Test of coordination
- Pepper's Ghost
- Magic Unmasked

The following overview will help you plan your visit.

Identification Station

Guests will learn about, and get sorted into, one of the four disciplines that are the basis for all super powers: Powers of the Body; Powers of Mastery; Gadgets and the Elements. These four powers are reflected throughout the exhibit where guests can explore, learn, and test their skills at the many interactive stations to find out in which discipline of Superhero they excel.



Exhibition Themes & Orientation

Powers of the Body

This section explores the powers of strength, sight, flight, and speed and how those capabilities are used in superhero stories and in real life.

Powers of Mastery

Learn how the mastery of skills, such as tactical analysis, plays a role in the development of super powers.

Powers of the Elements

Explore the manipulation of the elements of water, electricity, earth, and fire play has relevance with humans and superheroes alike.

Power of Gadgets

Learn about the role of specialized gadgets in superhero stories and how modern scientists and inventors are exploring them for human use.

The Golden Age of Comics

This era, when modern comics were first published and increasing in popularity, spans the late 1930s to around 1950.

The Silver Age of Comics

From 1956 to circa 1970, this era is marked by artistic advancement and commercial success.

The Bronze Age of Comics

This era, from 1970 to 1985, is characterized by a return to darker plot elements and storylines featuring real-world issues.

The Modern Age of Comics

Beginning in 1985 and extending to present day, this era features more psychologically complex characters and a surge in independent comics.



Curriculum Connections

The content developed for *Hall of Heroes* supports student understanding of key ideas developed within the Next Generation Science Standards. The goals of these activities include students: 1) recognizing themselves as researchers and innovators; 2) developing critical thinking and problem solving skills; and 3) exploring new concepts through discovery.

Next Generation Science Standards

Dimension 1: Practices

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating and communicating information

Dimension 2: Crosscutting Concepts

- Patterns
- Cause and Effect: Mechanism and Explanation
- Systems and System Models
- Energy and Matter: Flows, Cycles and Conservation
- Structure and Function

On-Line Resources

Next Generation Science Standards
<http://www.nextgenscience.org>

Kansas State Department of
Education – Science Standards
<http://community.ksde.org/Default.aspx?tabid=5975>



Dimension 3: Disciplinary Core Ideas

- Domain 1: Physical Sciences
 - Structure and Properties of Matter
 - Forces and Interactions
 - Energy
- Domain 4: Engineering, Technology and Applications of Science
 - Engineering Design

International Standards for Technology in Education (ISTE) Standards for Students

1. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.
 - a. Apply existing knowledge to generate new ideas, products, or processes
 - b. Create original works as a means of personal or group expression
 - c. Use models and simulations to explore complex systems and issues
 - d. Identify trends and forecast possibilities
2. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
 - a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media
 - b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats
 - c. Develop cultural understanding and global awareness by engaging with learners of other cultures
 - d. Contribute to project teams to produce original works or solve problems

On-Line Resource

International Standards for
Technology in Education (ISTE)
<http://www.iste.org/standards/ISTE-standards/standards-for-students>



4. Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
 - a. Identify and define authentic problems and significant questions for investigation
 - b. Plan and manage activities to develop a solution or complete a project
 - c. Collect and analyze data to identify solutions and/or make informed decisions
 - d. Use multiple processes and diverse perspectives to explore alternative solutions

6. Technology operations and concepts: Students demonstrate a sound understanding of technology concepts, systems, and operations.
 - a. Understand and use technology systems
 - b. Select and use applications effectively and productively
 - c. Troubleshoot systems and applications
 - d. Transfer current knowledge to learning of new technologies



Preparing for the Exhibition

Prior to your visit, review this guide and the Wilbur D. May Museum online information about the exhibition at www.maycenter.com.

Classroom Activities and Resources

What are Superheroes and Super Powers?

Modify as appropriate to age group and course.

1. Have students discuss what they think makes a superhero and generate a list of the types of powers and skills they need. (This activity can be enhanced using a mind-mapping tool.)
2. Ask students what kinds of things they think influence the artists and writers who create superheroes? How might they draw from what was happening in the world/their lives to influence their creation?
3. Ask students to create a superhero for the current time period. What powers would the hero have? What responsibilities would their powers be used for?

Hero | 'hir-(.)ō

1. : a mythological or legendary figure often of divine descent endowed with great strength or ability
2. : a person admired for achievements and noble qualities

Manipulate | mə-'ni-pyē-'lāt

1. : to treat or operate in an especially skillful manner
2. : to control or play upon by artful or unfair means, especially to one's own advantage

Mastery | mas-t(ə-)rē

3. : possession or display of great skill or technique
4. : skill or knowledge that makes one master of a subject

Power | paū(-ə)r

1. : ability to act or produce effect
2. : physical might

Super | sü-pər

1. : very large or powerful
2. : exhibiting the characteristics of its type to an extreme or excessive degree



4. Have students ask their parents or an adult about the superheroes they remember from their childhoods. How are those heroes the same and how are they different today? What makes superheroes from the past relevant today?

Video Resource

[Become a Superhero](#)

In this short (2:03) video, Michio Kaku, an American theoretical physicist and futurist, reveals plans to create a super suit which will give the wearer superpowers equivalent to that of the superheroes found in comics.

Powers of the Body

Modify as appropriate to age group and course.

1. Superheroes have a variety of powers, including super strength, speed, and vision, as well as the ability to fly. What kinds of advances (technological, physical, etc.) are making those powers greater in real life?
2. Most superheroes are not all powerful, they have some kind of weakness (i.e. Superman and kryptonite). What do you think is important about including a weakness in the creation of a superhero?

Powers of Mastery

Modify as appropriate to age group and course.

1. Ask students to share a skill or activity that they have mastered. What steps did they take? What are the resources they used to help them (i.e., learning from someone else, using technology to assist them, etc.)?



Video Resource[The Feynman Technique](#)

This short video (2:01) uses illustration to describe the Feynman Technique, a method developed by Richard Feynman for learning and mastering new subjects.

Powers of the Elements

Modify as appropriate to age group and course.

1. The manipulation of physical elements (water, earth fire, electricity) has been a hallmark of many superheroes, some of whom are endowed with that power and some of whom have invented technologies to manipulate the elements. How have these elements been used? What are some positive outcomes of being able to manipulate the elements? What are some challenging outcomes?
2. How are elements being controlled/used today for the good of humans? What are the impacts of those processes? What kinds of technologies might be invented in the future for these purposes?

Power of Gadgets

Modify as appropriate to age group and course.

1. What futuristic technologies/gadgets have you read about in comics (or seen in a movie) that you are unsure we are capable of accomplishing with current technology? What resources or technologies need to be invented for it to come to fruition?
2. What futuristic technologies/gadgets have you read about in comics (or seen in a movie) that you see benefits of for society? If you don't already know, search for



the technology to see if it exists and share a description of the technology and how it is currently being used.

3. Gadgets are often an important part of a superhero's activities. What kind of features would you include in developing a superhero gadget? What kinds of things will the gadget do?
 - i. Have students design a gadget (drawn or constructed).
 - ii. Have them seek out advice from a peer and an adult to help them uncover any issues or adjustments they may need to consider in the development of the gadget.
4. How might advances in technology influence the types of gadgets that are imagined for superheroes? How might gadgets that have been used in the past influence future advances in technology?

Other Areas of Inquiry

1. Movies and television shows/comics featuring superheroes use music to create a theme song for their hero. What kinds of musical elements would make a good superhero theme?
2. How might tempo, sound, and the use of various instruments be used to create an effective theme song? How might musical themes vary based on the type of superpower?
 - i. Have students work individually or in small groups to develop a superhero theme song.



Activity Resource

[Soundation Studio](#)

This site allows users to create their own multi-track recording.

3. Many superheroes wear masks as part of their persona. What are some reasons the use of a mask might be important to a superhero? What kind of mask would you create for a superhero?
 - i. Create/draw a superhero mask and explain its features to a friend.

4. How do political and historical events affect the creation of hero stories? What kinds of influences have comic book artists and writers drawn upon to create their characters and stories?
 - i. Create a superhero of the future. What kinds of powers will be important for this superhero?

Additional Resources[Science & Entertainment Exchange](#)

This program connects entertainment industry professionals with top scientists and engineers to create a connection between accurate science and engaging storytelling.

[Spider Math and Bat Physics](#)

This article features the work of Jim Kakalios, a physics professor who has consulted on films to help filmmakers depict superpowers in a more scientifically factual way. The article includes the science behind Spiderman's spider silk and how the Invisible Woman disappears, and also highlights how some stories get the facts wrong.



Kakalios has turned his fascination with comic books into an introductory physics course called The Physics of Superheroes. The article above includes a video of an interview with him.

[Science of Incredible Hulk and Captain America](#)

This article from Stanford news focuses on the science of the origin stories of Captain America and the Incredible Hulk.

[Can Science Transform Us Into Superheroes?](#)

This article, and embedded videos, explain how advances in technology and genetics are making advanced physical and mental traits more attainable and examine the related ethically and financial issues.

[TED Talks – Superhero Science](#)

This series of videos examines the question, “If superheroes were real...?” Topics include invisibility, flight, immortality, super strength, super speed, and body mass.

[Generation Nano Competition](#)

This competition, a project of the National Science Foundation, asks high school students to submit an original idea for a unique superhero who uses nanotechnology to undertake a societal mission. Students submit a short, written entry, as well as a short video and comic strip that illustrates their superhero in action using nanotechnology.



Visionaries featured in Hall of Heroes

Look up one or more of the visionaries listed below. Have their characters and stories had an impact on your life or the life of someone you know? How? What were the influences they drew on to create their characters? What kinds of changes might you make to their work or ideas?

Neal Adams

(June 6, 1941 –)

- American comic book artist known for creating some of the definitive imagery of the DC Comics characters Superman, Batman, and Green Arrow.
- His first attempts to find work at DC Comics were unsuccessful. It was only after he had worked at several other companies that he re-approached DC Comics and was hired.

Dave Cockrum

(November 11, 1943 – November 26, 2006)

- American comic book artist known for co-creating the X-Men characters Nightcrawler, Storm, and Colossus.
- He created the Nightcrawler character during the time he served in the United States Navy, although the character wasn't used until many years later.

Steve Ditko

(November 2, 1927 –)

- American comic book artist best known as the co-creator, with Stan Lee, of Spider Man and Doctor Strange.
- Enlisting in the Army after high school, Ditko drew comics for an Army newspaper.



Dave Gibbons

(April 14, 1949 –)

- An English comic book artist and writer best known for his collaborations with writer Alan Moore, including the Watchmen miniseries.
- He began reading comic books at the age of seven and was a self-taught artist.

Bob Kane

(October 24, 1915 – November 3, 1998)

- American comic book writer and artist who co-created the DC Comics character Batman.
- One of the influences for the creation of Batman was Leonardo da Vinci's diagram of the ornithopter, a flying machine with huge bat-like wings.

Gil Kane

(April 6, 1926 – January 31, 2000)

- A Latvian-born American comic book artist, his career including working with every major comics company and character.
- He created several major storylines, including one that ultimately spurred an update of the Comics Code Authority.
- He created the character design for the modern-day version of Green Lantern.

Jack Kirby

(August 28, 1917 – February 6, 1994)

- Considered a major innovator in the medium, his influence was broad and he produced a large number of characters, including Captain America.
- He used several pseudonyms during his career, including Jack Curtiss, Lance Kirby, and Fred Sande.



Stan Lee

(December 28, 1922 –)

- An American comic book writer, editor, publisher and media producer. Working in collaboration with several other artists, he helped create Spider Man, the Hulk, the Fantastic Four, Iron Man, Thor, and the X-men.
- Received a National Medal of Arts in 2008

Todd McFarlane

(March 16, 1961 –)

- Canadian artist and writer, he is known for his work in comic books, including Spawn and the Spider-Man franchise.
- He created the Spawn character while in high school.

Tony Moore

(December 20, 1978 –)

- American comic book artist known for co-creating The Walking Dead series.
- A fan of comic books since he was a young child, he began work in the comics business at the age of 21.

Joe Shuster

(July 10, 1914 – July 30, 1992)

- Canadian-American artist best known for co-creating the DC Comics character Superman.
- Being a child of immigrants is thought to have influenced his work.
- It took six years to find a publisher who would print the first comic book featuring Superman.



During Your VisitObservation Worksheet

1. What is the name of this exhibition and what does that name tell you about the displays and activities here?
2. Who is one of the comic book artists/writers and what did they create that you found interesting? (To extend your learning, research this person to find out more about this writer/artist.)
3. Name two of the powers of the body and how they are used by superheroes.
4. Think of one of the areas of mastery described in the exhibit. What skills are required to become a master? How realistic is the development of that mastery in real life?
5. Think about your community and surrounding area. In what ways are elements such as water, electricity and earth being manipulated to create livable communities? What are some of the positive and negative aspects of that manipulation?
6. Gadgets are designed to help us complete tasks more easily. What kinds of gadgets do you use?
 - a. What capabilities do you like about each of those gadgets?
7. What new gadget might you design and what components or capabilities will it have? (It is important to analyze why certain capabilities are important to add in your design.) Tell why you feel a gadget would need those capabilities.



8. If you created a superhero today, what one power would you want it to have?
9. What is one area in society where you think a superhero would be extremely helpful? Why?
10. Pick a display in the exhibition.
 - a. What did you learn by looking at/interacting with the display?
11. Choose another display in the exhibition that you find particularly interesting.
 - a. Have you seen something similar to the technology/power being demonstrated before? If so, where?
 - b. How would you describe this display and what you learned from it to a friend?
 - c. Draw a picture/diagram that illustrates the super power highlighted in the display, including something about its history and its future.



Activities Reflection

1. Pick an exhibition activity that you participated in.
 - a. What was the task you were trying to complete?
 - b. What about it was easier than you thought it would be? What was more difficult?

2. Choose another activity that you participated in.
 - a. How would you describe the activity to a friend?
 - b. What skills did you use to complete the activity?

3. Choose another activity in the exhibition that you found particularly interesting.
 - a. What did you learn by participating in the activity?

