Science City is more than just a place to have fun. Science is lurking in unsuspecting places. Use this guide to help you discover where!

Please note: Exhibits are sometimes removed temporarily for repair or refurbishment, or may be in use by other groups, so be prepared to be flexible.

Teachers: Standards for KS and Strands for MO listed on these pages next to the exhibits are intended for guides to understanding or reinforcing concepts addressed by these suggested standards. Follow-up in your classroom about the students’ experiences will further enhance the hands-on learning experienced at Science City.

*The following exhibits are listed in alphabetical order. This is not a recommended flow for exploring the science center. Reference a science center map for assistance.
**Guide**

The DINO Lab is about paleontology. Observe the activity in the lab to see step-by-step processes performed to preserve the fossils.

- If fossils are being prepared during your visit, what process did you observe?

Use the informational guides surrounding the DinoLab to answer the following.

- What is the definition of “dinosaurs”?
- When did dinosaurs live (Period Name)?
- About how many years ago?
- Where are dinosaur fossils found?
- Did dinosaurs lay eggs?
- What types of foods do animals that are carnivorous eat?
- What types of foods do animals that are herbivorous eat?
- What types of foods do animals that are omnivorous eat?
- Describe the process in which most dinosaur fossils have been formed? *(Hint: Chart in Prehistoric Dig area).*
Giant Lever

NGSS: HS-PS2
M0 Science Strands 2.2F
CCS ELA Connections: CCSS.ELA-LITERACY.W.9-10.4, 11-12.4

Guide

Before performing a tug-of-war, observe the difference in point of attachment for each rope on the Giant Lever. NOTE: One rope is attached two feet above the fulcrum, the other is attached six feet above the fulcrum—or the point at which the lever pivots.

- Predict which rope will have a mechanical advantage.
- Justify your answer.

Activity: Gather two teams of two or more people.

- **Trial 1:** Attempt to make the teams evenly matched in strength. Perform a tug-of-war, and then switch sides.

- **Trial 2:** Group your smallest/weakest members against the largest/strongest members. Perform a tug-of-war, and then switch sides.

- What conclusions would you draw?

FACT

The lever is one type of simple machine.

Name other simple machines.

Challenge: Name an application of each simple machine.
Light Alley

MO Science Strands: 7.1

Guide

Shadow Wall: Make your shadow “stick” to the light green wall.
(If available, experiment with cell phone “flashlight” to create an image on Shadow Wall.)

- How does your shadow “stick” to the wall?
- What other things have you seen that use phosphorescent “glow-in-the-dark” technology?
Mister E. Hotel

MO Science Strands: 7.1
CCS ELA Connections: CCSS.ELA-LITERACY.W.9-10.4, 11-12.4

Guide

FACT

There is an optical illusion (a trick on your brain) in every room.

Before proceeding to the Mr. E Hotel:

Red Light Sign: Find the tiny sign near the corner of the railing outside of the Astronaut Training Center and follow directions.
  • What two symbols appeared when you followed the directions?

Faces in the Rotunda: As you approach the lobby of the Mr. E Hotel, look up and notice the portraits surrounding the inside of the rotunda (lobby).
  • As you move and stare at the faces, where do they appear to be staring?

Room #18: Try our new bed. Lie on the bed and follow the instructions as posted.
  • Why do you think your vision is affected by the configuration of the room?
  • How long does the effect last?

Haunted Washroom: Enter the washroom located behind the black curtain. Take time to adjust to the lighting.
  • What do you see?
  • What differences do you see when people are wearing different color clothes?

Faces/Vases: Stare at the white rotating vase—then concentrate on the black space around the vase.
  • Do you see faces or vases?
  • When you see the faces, what do they appear to be doing?
**Nature Center**

HS-LS1, HS-LS2  
MO Science Strands: 3.1A, 3.1D, 4.1C, 8.3B  
CCS ELA Connections: CCSS.ELA-LITERACY.W.9-10.4, 11-12.4

**THINK!** Tapping on the glass or cages frightens the animals. Please be kind to our animals and use quiet voices. Ask a Science City staff member for more information about the animals.

**GUIDE**

**Observe one of our Veiled Chameleons.**  
- By looking at their hands as a clue, what do you suppose their natural habitat would be?

**FACT**  
The chameleon’s diet in the wild is insects.

- What do you notice about the movement of the chameleon’s eyes and how might that be related to their steady diet of insects?

**Ask an educator in the Nature Center to explain what causes the Chameleon to change color.**  
- Can you think of ways humans might mimic the chameleon’s ability to change color in order to stay comfortable in its surroundings?

**Check out our animals in our Night Gallery.**  
- How might the human population’s lifestyle and habits effect nocturnal animals’ natural homes?

**Look at all the residents of the Nature Center.**  
- Are they unicellular organisms or multicellular organisms?

- Do you think it is possible for our Nature Center to include both types of organisms?

- Why/Why not?

- What type of exhibit could be added to include unicellular organisms?

**Looking at the Spiny-tail lizard, you will notice water missing from her habitat.**  
- What can you deduce about the origin of this lizard?

- How do you think she acquires water?
Science on a Sphere *(Teacher guidance recommended)*

Various depending on the content  
CCS ELA Connections: CCSS.ELA-LITERACY.W.9-10.4, 11-12.4

**Guide**

Visit the kiosk inside the Science on a Sphere exhibit area. There are a variety of choices that address various Kansas and Missouri education standards. Select a dataset that best fits the grade level curriculum for your group. Take a seat and observe the many facets demonstrated with this technology.

- What dataset did you watch?
- Record one interesting thing that you learned.
- What other topic would you like to learn about at Science on a Sphere at another visit?

**Sky Bike**

NGSS: HS-PS2  
MO Science Strands: 2.2 (Grades 9-11), 7.1  
CCS ELA Connections: CCSS.ELA-LITERACY.W.9-10.4, 11-12.4

**Guide**

Ride the bike across the cable *(if you meet the height/weight requirements).*

- Why do you not fall off the cable?
- What scientific principles does the sky bike demonstrate?
- If the counterweight is 200 lbs., what design changes is necessary for a person weighing more than 200 pounds to safely ride the sky bike?
Water Maze

MO Science Strands: 2.2A, B, D(9th-11th), 4.1C, D(9th-11th), 7.1, 8.1
CCS ELA Connections: CCSS.ELA-LITERACY.W.9-10.4, 11-12.4

Guide

Water is fun to play in, no matter our age. Experiment here with Newton’s laws of motions!

First, remove all small and large plexi-barriers from the Water Table. You now see the standard flow of the water.

- How well does a rubber duck travel down the water?
- Is there contact force acting on the duck that is possibly slowing it down?
- What force is that?
- How can you use the plexi-barriers to alter the flow and remove the contact force?

Using the barriers again, can you make the water go against its standard flow and the non-contact force of gravity? (Can you make the water flow “up hill”?)

- In the world of nature, how would re-routing water or making it flow against its standard flow help or hinder an environment and/or ecosystem?
- For what reason would rivers or streams need to be altered or rerouted?