

Experience Guide

Grades: 2 – 3

To support meaningful engagement with museum content, we have developed grade-specific experience guides aligned with NGSS standards. These guides are designed to help students and chaperones explore exhibitions more deeply and purposefully.

Each guide is organized by gallery content and can be tailored to your needs. Before your visit, you may print the guides at your school, selecting specific sections based on your learning objectives. This flexibility allows you to focus on topics or exhibits that best align with your curriculum goals.

Use these guides to lead your students through exhibitions with engaging conversation starters and hands-on activities, creating a focused and enriching museum experience.



SAINT LOUIS
SCIENCE CENTER



LOWER LEVEL

- + Dinosaurs and Dig Site
- + Earth Sciences
- + Paleo Lab
- + Experience Energy
- + Energy Stage
- + T.rex Room
- + Dino Den (Esports)
- + May Hall



Earth Sciences

T-Rex Exhibit

Activity 1: Draw a Dinosaur

Objective:

Use observation skills to draw the T-Rex and compare it to other dinosaurs.

Instructions:

Have students look closely at the T-Rex and other dinosaur models. Ask them to draw their own version of a dinosaur, noting details such as size, shape, and any unique features.

Discussion:

What do they notice about the T-Rex compared to other dinosaurs? How do they think it moved and behaved?

Standard:

LS1.A – Structure and Function.

Diorama Inaccuracies

Activity 2: Spot the Differences

Objective:

Identify inaccuracies in the diorama and discuss why these might exist.

Instructions:

Read the information panel about the inaccuracies. Ask students to list or draw the differences between the diorama and what scientists now believe dinosaurs looked like.

Discussion:

Why do they think our understanding of dinosaurs has changed over time?

Standard:

ESS1.C – The History of Planet Earth.

Fossils and Images

Activity 3: Fossil Match-up

Objective:

Match fossils with modern animals to understand how animals have changed over time.

Instructions:

Spend a few minutes looking at the fossils. Have students match fossils with pictures of modern animals that look similar.

Discussion:

How have these animals changed? Why do they think some animals look very different today?

Standard:

ESS1.C – The History of Planet Earth.

Pennsylvanian Diorama

Activity 4: Plant and Animal Hunt

Objective:

Identify different plants and animals in the diorama and discuss their characteristics.

Instructions:

In groups, try to find all the plants and animals listed on the placards.

Discussion:

How do these plants and animals compare to those we have today? What are some similarities and differences?

Standard:

ESS1.C – The History of Planet Earth.

Earthquake Simulator

Activity 5: Earthquake Exploration

Objective:

Understand the causes and effects of earthquakes.

Instructions:

Read the placards and learn about nearby earthquakes. Stand on the simulator and experience different sized earthquakes.

Discussion:

What did they feel during the simulation? How do they think earthquakes can change the landscape?

Standard:

ESS2.B – Plate Tectonics and Large-Scale System Interactions.



EXPERIENCE ENERGY

Solar Energy Exhibit

Activity 1: Solar Power in Action

Objective:

Understand how solar energy is captured and used.

Instructions:

Look at the solar panels and read about how they work.

Discussion:

How do solar panels help us use the sun's energy? What are some other ways we use solar energy?

Standard:

PS3.A – Definitions of Energy.

Wind Energy Exhibit

Activity 2: Make Your Own Windmill

Objective:

Learn how wind energy is harnessed.

Instructions:

Look at the wind turbine model and discuss how it generates electricity. Then have students create a simple foam windmill.

Discussion:

How does the wind make the windmill turn? What happens when there is no wind?

Standard:

PS3.B – Conservation of Energy and Energy Transfer.

Hydropower Exhibit

Activity 3: Waterpower Exploration

Objective:

Discover how water can be used to generate energy.

Instructions:

Look at the hydropower exhibit and learn how flowing water can create electricity.

Discussion:

How does water help us generate power? Why is it important to have flowing water?

Standard:

ESS3.A – Natural Resources.

Fossil Fuels Exhibit

Activity 4: Fossil Fuel Facts

Objective:

Understand what fossil fuels are and how they are used.

Instructions:

Read about how fossil fuels are formed and used for energy. Have students draw a picture showing the process of fossil fuel formation.

Discussion:

What are some examples of fossil fuels? How do we use them in our daily lives? After looking at wind, solar, water and coal, does one type seem better than another?

Standard:

ESS3.A – Natural Resources.

Energy Conservation Exhibit

Activity 5: Energy Savers

Objective:

Learn ways to conserve energy.

Instructions:

Explore the exhibit on energy conservation and find different ways we can save energy at home and school. Have students list three ways they can conserve energy in their daily lives.

Discussion:

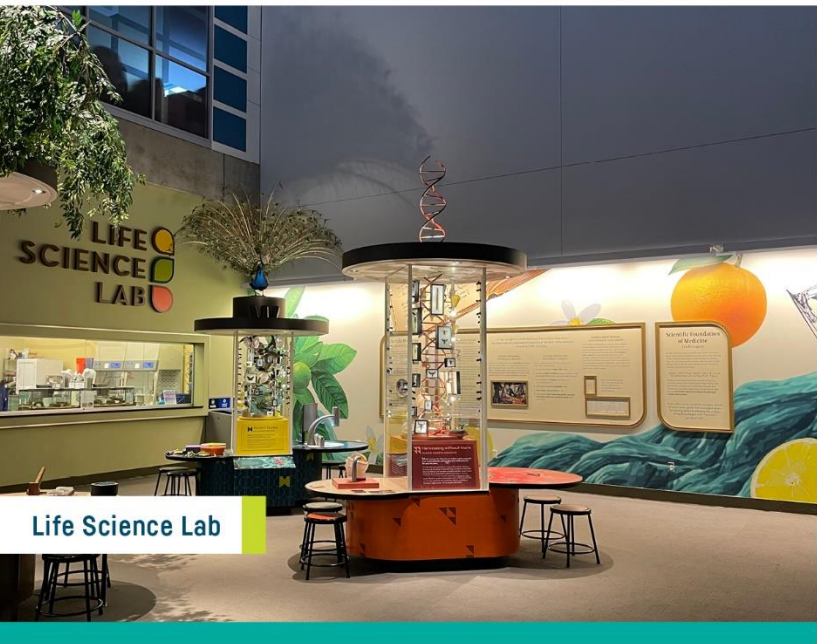
Why is it important to conserve energy? How can saving energy help the environment?

Standard:

PS3.B – Conservation of Energy and Energy Transfer.



GROW



Life Science Lab



GameXPoration



FIRST FLOOR

- + Lobby / Tickets
- + Life Science Lab
- + GameXPoration
- + GROW
- + Boeing Hall





Digital Game History

Activity 1: Exploring Digital Game History

Objective:

Understand the evolution of digital games and their impact on technology and culture.

Instructions:

Find the display showcasing the first video game console. Examine the timeline of game development.

Discussion:

What differences do you notice between this old console and the ones you use today? Can you find a game that was popular when your parents were children?

Standard:

PS4.C – Information Technologies and Instrumentation.

Interactive Gaming Stations

Activity 2: Play and Learn

Objective:

Experience hands-on learning through interactive digital games.

Instructions:

Spend time at the interactive console stations. Choose a game to play and note how it uses technology to create an interactive experience.

Discussion:

Did you enjoy this game? How does this game use light, sounds, and movement to make it fun to play?

Standard:

PS4.C – Information Technologies and Instrumentation.

The Future of Gaming

Activity 3: Future Game Design

Objective:

Predict future developments in gaming technology.

Instructions:

Think about what games might look like in the future.

Discussion:

What features would you add to a game to make it more fun or educational? How do you think games will change in the next 10 years? What new technology do you think will be used in future games?

Standard:

ETS1.C – Optimizing the Design Solution.

Historical Medicine and Nature

Activity 1: Discovering Old and New

Objective:

Learn about historical medical practices and compare them with modern techniques inspired by nature.

Instructions:

Look at the displays showcasing leeches and medicinal plants. Discuss how these historical methods are still relevant today.

Discussion:

Can you find an example of a tool that was inspired by an animal? How did people use plants to treat illnesses in the past? Why do you think some of these methods are still used today?

Standard:

LS1.A – Structure and Function.

Nature Inspired Medical Innovations

Activity 2: Amazing Animal Abilities

Objective:

Understand how natural phenomena inspire medical innovations.

Instructions:

Explore how the axolotl salamander's ability to regenerate tissue is used in medical research. Learn about gecko feet and the development of surgical tape.

Discussion

How can learning about these animals help to create new tools? Can you think of other animals that might inspire new inventions?

Standard:

LS1.B – Growth and Development of Organisms.

DNA and Venoms

Activity 3: DNA Discoveries

Objective:

Learn how DNA sequencing helps identify medicinal compounds in animal venoms.

Instructions:

Look at the large DNA model and read about different venomous animals. Discuss how scientists can study venoms without harming animals.

Discussion:

How do scientists use DNA to study animal venoms? Why is it important not to harm animals while researching their venoms? What can we learn from studying animal venoms?

Standard:

LS2.A – Interdependent Relationships in Ecosystems.

Clinical Trials

Activity 4: Early Experiments

Objective:

Understand the history and importance of clinical trials.

Instructions:

Learn about James Lind's experiments on scurvy treatments. Discuss how clinical trials have evolved over time.

Discussion:

What was James Lind trying to discover with his experiments? Why are clinical trials important for new medicines? How do you think clinical trials help keep us safe today?

Standard:

LS1.B – Growth and Development of Organisms.

Observing Aquatic Animals

Activity 5: Animal Behaviors and Adaptations

Objective:

Observe and understand the behaviors and adaptations of aquatic animals.

Instructions:

Spend a few minutes observing the axolotls, Western Lesser Siren, and African Clawed Frogs in the display window. Note any interesting behaviors and read about their adaptations.

Discussion:

What behaviors do you notice in these animals? What adaptations do these animals have for their natural environments? How do these adaptations help them survive?

Standard:

LS1.A – Structure and Function.



Greenhouse Area

Activity 1: Exploring Plant Life Cycles

Objective:

Identify stages of a plant's life cycle from seed to maturity.

Instructions:

Observe various plants grown in the greenhouse area.

Discussion:

What do plants need to grow? How do plants change as they grow?

Standard:

LS2.A – Interdependent Relationships in Ecosystems.

Outside – Composting Area

Activity 2: Human Impact on the Environment

Objective:

Understand the benefits of composting for soil and the environment.

Instructions:

Visit the composting area and learn about the process.

Discussion:

How does composting help reduce waste? What can we compost at home?

Standard:

ESS3.C – Human Impacts on Earth Systems.

Outside – Blooming Flowers Area (Seasonal)

Activity 3: Interactions in the Ecosystem

Objective:

Understand the role of pollinators in the ecosystem.

Instructions:

Observe the plants and insects in the area.

Discussion:

Why are pollinators important for plants? How do plants and pollinators help each other?

Standard:

LS2.B – Cycles of Matter and Energy Transfer in Ecosystems.

Pavilion – Hydroponics Display

Activity 4: Understanding the Needs of Living Things

Objective:

Learn how plants can grow without soil.

Instructions:

Observe the hydroponics display and identify resources provided to the plants.

Discussion:

What are the essential needs of plants to survive? How do these needs compare to the needs of humans?

Standard:

LS1.C – Organization for Matter and Energy Flow in Organisms.

Pavilion – Vertical Aquaponic Farming Exhibit

Activity 5: Sustainability and Agriculture

Objective:

Learn about innovative farming techniques in urban environments.

Instructions:

Explore the vertical aquaponic farming exhibit in the greenhouse.

Discussion:

How does vertical farming help save space and resources? Why is it important to find new ways to grow food in cities?

Standard:

ESS3.A – Natural Resources.

Pavilion – Interactive Displays

Activity 6: Interactive Learning

Objective:

Learn about the science behind food production.

Instructions:

Engage with digital activities that show the journey of food from farm to table.

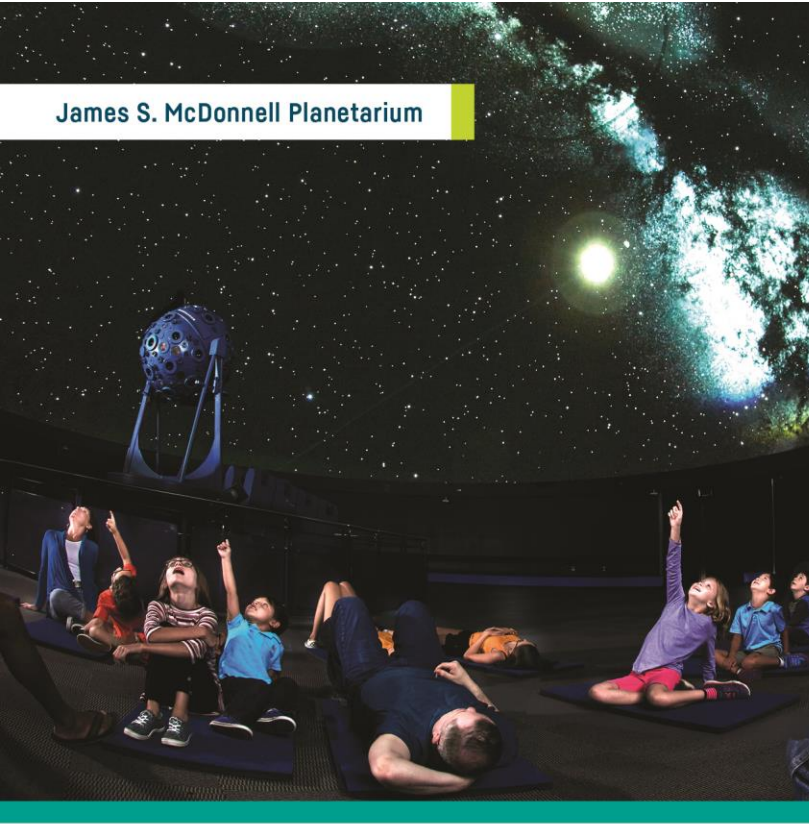
Discussion:

What steps are involved in growing and preparing food? How can technology help improve agriculture?

Standard:

ETS1.A – Defining and Delimiting Engineering Problems.

James S. McDonnell Planetarium



SECOND FLOOR



Structures

- + OMNIMAX® Theater
- + McDonnell Planetarium
- + Structures
- + Experience Flight
- + Current Curiosities
- + Makerspace
- + Discovery Room



Makerspace





MAKERSPACE

Parachute Experiment

Activity 1: Experiment with Parachutes

Objective:

Understand how different weights and parachute designs affect flight.

Instructions:

Provide students with materials to create their own parachutes. Encourage them to experiment with different weights and designs to see which one stays in the air the longest.

Discussion:

Which parachute design worked best and why? How did the weight affect the flight? What changes would they make to improve their design?

Standard:

PS2.A – Forces and Motion.

Riga-Ma-Jig Exhibit™

Activity 2: Build a Structure

Objective:

Develop problem-solving and engineering skills by constructing a stable structure.

Instructions:

Give students a challenge to build a structure that can support a certain weight using the Riga-Ma-Jig materials. Provide a variety of connectors and beams for them to use.

Discussion:

What strategies did they use to make their structure stable? What challenges did they face, and how did they overcome them? How can they improve their design?

Standard:

ETS1.A – Defining and Delimiting Engineering Problems.

Air Ball Exhibit

Activity 3: Bernoulli's Principle in Action

Objective:

Explore the principles of air pressure and flight.

Instructions:

Let students experiment with the blower tubes to keep the balls suspended in the air. Challenge them to move the balls through the hoops without touching them.

Discussion:

How does the air pressure keep the balls in the air? What happens when they change the position of the blower tubes? How can they improve their aim to get the balls through the hoops?

Standard:

PS3.B – Conservation of Energy and Energy Transfer.

Two-Person Pinball Exhibit

Activity 4: Teamwork and Forces

Objective:

Understand the concepts of force and motion through a collaborative game.

Instructions:

Have students pair up and play the pinball game together. They should discuss and plan their strategy to score points by directing the ball through different paths.

Discussion:

How did they use force to control the ball's direction? What strategies worked best for scoring points? How did working as a team help them achieve their goals?

Standard:

PS2.A – Forces and Motion.

CURRENT CURIOUSITIES

Keva Planks

Activity 1: Tallest Tower

Objective:

Develop problem-solving and engineering skills by constructing a stable structure.

Instructions:

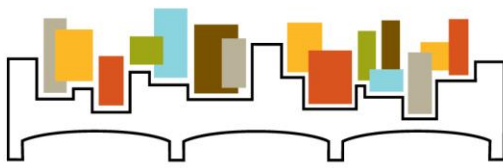
Divide into small groups around the tables in the gallery. Have each group count out 30 Keva planks. Challenge the groups to make the tallest, free-standing tower they can within three minutes.

Discussion:

What was challenging about this activity? How did you make your structure stable? Do you think you could make a taller tower if you had more time?

Standard:

ETS1.A – Defining and Delimiting Engineering Problems; ETS1.B – Developing Possible Solutions; ETS1.C – Optimizing the Design Solution.



STRUCTURES

Arch Building Exhibit

Activity 1: Build Your Own Arch

Objective:

Understand the stability and strength of arches through hands on construction.

Instructions:

Students will use provided blocks to construct an arch, carefully aligning them to form a self-supporting structure. After building, discuss why the arch holds up even without additional support.

Discussion:

What makes the arch stable? Why do you think this shape is used in architecture? How would the structure change if we removed one of the blocks?

Standard:

PS2.A – Forces and Motion.

Bridges Exhibit

Activity 2: Bridge Challenge

Objective:

Explore different types of bridges and their design principles.

Instructions:

Students will examine different models of bridges (suspension, beam, truss) and attempt to build their own bridge. They can test the strength of their designs by placing weights on the bridges.

Discussion:

Which type of bridge holds the most weight? How do the different designs affect the strength of the bridge? What forces are acting on the bridges?

Standard:

ETS1.C – Optimizing the Design Solution.

Skyscrapers Exhibit

Activity 3: Tall Towers

Objective:

Learn about the forces that affect tall structures and how engineers design skyscrapers to resist these forces.

Instructions:

Students will attempt to build the tallest tower they can using building blocks, while ensuring it remains stable. Encourage them to think about how wind or earthquakes might affect their structure.

Discussion:

What makes a tall structure stable? How would you redesign your tower to make it more stable? What forces could cause a tall structure to fall over?

Standard:

PS2.B – Types of Interactions.

Highways Exhibit

Activity 4: Roadway Riddles

Objective:

Understand the planning and design of highway systems and how they are built to accommodate traffic and safety.

Instructions:

Students will explore a model of a highway system. Have students design their own highway layout on paper or using provided materials, considering how traffic will flow and where exits should be placed.

Discussion:

What do you need to consider when designing a highway? How does your design help vehicles travel safely and efficiently? What challenges did you face in creating your highway system?

Standard:

ETS1.B – Developing Possible Solutions.

Water Infrastructure Exhibit

Activity 5: Water Flow Fun

Objective:

Explore how water flows through a city's infrastructure and how engineers design systems to manage this flow.

Instructions:

Using a water flow model, students will simulate how water moves through different pipes and drainage systems. Have students adjust the flow and observe what happens when the system gets blocked or overloaded.

Discussion:

What happens when water cannot flow properly through a system? How do cities prevent flooding? What changes could you make to your system to improve the water flow?

Standard:

ESS3.C – Human Impacts on Earth Systems.



Activity 1: Exploring the Mars Base

Objective:

Understand the challenges of living and working on Mars and how scientists and engineers design habitats to overcome these challenges.

Instructions:

As a group, explore the Mars Base exhibit. Pay attention to how the habitat is designed to protect astronauts from the harsh environment on Mars. Look at the different stations in the base. What do astronauts need to survive? How do they get food, water, and air?

Discussion:

Why is it difficult to live on Mars compared to Earth? What do you notice about the design of the habitat? How does it help astronauts stay safe and healthy?

Standard:

ESS3.A – Natural Resources and Human Impact.

Roving with Perseverance

Activity 2: Driving the Mars Rover

Objective:

Discover how the Perseverance Rover helps scientists explore Mars by gathering data and samples.

Instructions:

Interact with the Mars Rover exhibit by simulating driving a rover on Mars. Pay attention to how the rover moves and collects samples. Explore the different tools the rover uses to study the Martian surface.

Discussion:

How do you think the rover helps scientists learn more about Mars? What challenges might the rover face while navigating Mars' surface?

Standard:

ETS1.B – Developing Possible Solutions.