

Inquiry

Let these exhibits lead your curiosity as you ask questions, make observations, and try experiments.

Think About It

- How can the things you observe at each exhibit be **organized** and how do they **interrelate**?
- How do the things you observe change?
- How can we **communicate** what we learn to others?

How to use this guide

To help guide your visit, we have developed this learning pathway to explore a specific topic using some of the exhibit components.

- Look up the words in bold in the vocabulary list on the back.
- Follow this path as you explore the gallery, try a different path, or create your own path and follow where your curiosity takes you!

Path

MOTION DISH

- Start a ball rolling in the dish and use your **senses** to make **observations** about what is happening. Do you notice any patterns?
- Describe the different **variables** that change as the ball rolls. How many different variables stay the same?



HIT THE BUCKET

- What is the relationship between where the ball starts on the ramp and the speed at which the bucket turns?
- Try to create an **experiment** and find out.



THE SPIRAL

- Why do you think some balls stop at the top of the ramp and some keep rolling? Develop a **hypothesis**.
- Try testing your hypothesis. What could you try and do to see if you are right?



LOOP-THE-LOOP

- How close to the loop do you think the ball can start and still make it around? Try it!
- **Analyze** your **results**. Did it work? If not, what could you do differently?



SKI JUMP

- Try starting the ball at different positions on each ramp and **predict** which bucket it will land in.
- Keep trying until you can get the ball into each bucket in order from farthest to closest.



CREATE YOUR OWN EXPERIMENT

- Pick an exhibit. Is there anything you have observed that you would like to learn more about?
- How could you learn more about it?

What's Going On?

Inquiry is an active approach to learning that involves exploring the world, asking questions, making **discoveries**, and carefully testing those discoveries in the search for new understanding. The "scientific method" is a **process** that scientists use to find the answers to questions. It is the process of thinking through the possible **solutions** to a problem and testing each possibility to find the best one. This process can involve the following steps in any order: making observations, developing a hypothesis, making predictions, performing experiments and analyzing results.



Vocabulary

Learn More About It!

Stephen P. Kramer
**How to Think Like a Scientist:
 The Scientific Method in
 Practice.**
 HarperCollins, 1987.

Mike Blanford, et. Al.
**Teaching The Scientific
 Method: Instructional
 Strategies To Boost Student
 Understanding**
 Incentive Publications, 1994.

Janice VanCleave
**Janice VanCleave's Teaching
 the Fun of Science**
 Jossey-Bass, 2001.

Virginia S. Lee
**Teaching & Learning Through
 Inquiry.**
 Stylus Publications, 2004.

Amy E. Alvarado & Patricia R.
 Herr
**Inquiry-Based Learning Using
 Everyday Objects**
 Corwin Pres, 2003.

Concept to Classroom
[http://www.thirteen.org/edonline/
 concept2class/inquiry/index.html](http://www.thirteen.org/edonline/concept2class/inquiry/index.html)

**Introduction to the Scientific
 Method**
[http://teacher.pas.rochester.edu/
 phy_labs/AppendixE/AppendixE.ht
 ml](http://teacher.pas.rochester.edu/phy_labs/AppendixE/AppendixE.html)

The Inquiry Page
<http://inquiry.uiuc.edu/>

Analyze - To examine, closely study and evaluate in order to better understand.

Communicate - The act of expressing information or emotions from living thing, or machine, to another.

Discover - To learn, or become aware of something.

Experiment - The act of conducting a controlled test or investigation.

Hypothesis - A possible explanation for an observation that can be tested through experimentation. Often described as "an educated guess."

Inquiry - The act of learning through investigation.

Interrelate - To find out what a group of things have in common, or a how they a group of things are related.

Observation - The use of one's senses to learn something new.

Organize - To arrange, or order, into groups or patterns.

Predict - To suggest what may happen based on available information.

Process - A procedure or way of doing something.

Results - The outcomes of an experiment.

Senses - The means through which the body feels and perceives including: seeing, hearing, touching, smelling, and tasting.

Solution - a statement that solves a problem or explains how to solve a problem.

Variable - A factor which can change during an experiment.