

# Ames Public Library @HOME Activities

## Scientific Inquiry

Scientists study the world around them to discover new things, offer explanations for puzzling problems, and find new and improved ways to deal with existing processes. Scientists engage in scientific inquiry to learn, study, and draw conclusions. See a related video on the Library's YouTube Channel at <http://bit.ly/APLvideos>.

### Books and Media:

Title	Author / Performer	Call Number
<i>Why? Over 1,111 Answers to Everything</i>	Boyer, Crispin	J 031 BOY
<i>The Book of What If...?</i>	Murrie, M. & McHugh, A	J 031 MUR
<i>Big Book of Why, 1,001 Facts Kids Want to Know</i>	Perritano, John	J 031 PER
<i>Little Kids First Big Book of Why</i>	Shields, Amy	J 031.02 SHI
<i>Big Book of Science Experiments: A Step-by-step Guide</i>	(Time for Kids Books)	J 507.8 BIG
<i>Biodiversity: Explore the Diversity of Life on Earth with environmental Science Activities for kids</i>	Perdew, Laura	J 577 PER
<i>How Things Work Inside Out!</i>	Resler, T. J.	J 600 RES
<i>50 Wacky Inventions Throughout History</i>	Jackson, Paul	J 600 RHA
<i>So You Want To Be An Inventor?</i>	St. George, J & Small, D.	J 608 ST
<i>Bright From The Start: The Simple, Science Backed Way to Nurture Your Child's Developing Mind, From Birth to Age 3</i>	Stamm, Jill	J PC 649.122 STA
<i>Bill Nye the Science Guy - Pseudoscience</i>	Nye, Bill	J 501 (DVD) NYE
<i>Sid the Science Kid (DVD) Change Happens</i>		J 502 (DVD) SID
<i>Activity TV. Science (DVD)</i>	(Echo Bridge Home Entertainment)	J 507.8 (DVD) ACT

### Websites:

URL
<a href="https://science.education.nih.gov/supplements/webversions/processinquiry/guide/nih_doing-science.pdf">https://science.education.nih.gov/supplements/webversions/processinquiry/guide/nih_doing-science.pdf</a>
<a href="https://ssec.si.edu/stemvisions-blog/what-inquiry-based-science">https://ssec.si.edu/stemvisions-blog/what-inquiry-based-science</a>

## Vocabulary

Scientists learn about the natural world through scientific inquiry. Scientific inquiry is done in a continuous incremental manner through these steps - Question/Inquiry, Research, Hypothesis, Experiment, Observation, Results/Conclusions, and Communication.

Question/Inquiry - Scientific Inquiry is asking questions that can be answered through investigations. The questions that scientists ask are testable questions that are not answered by personal opinions or belief in the supernatural. Testable questions are answered by collecting evidence and developing explanations based on that evidence.

Research – Once scientists identify the question, they design experiments and gather tools to learn more about the issue they are investigating. They use a variety of techniques, gather, analyze, and interpret the data. Research can also involve collecting specimens, observing, and describing objects and events.

Hypothesis – This is an educated guess or prediction based on the outcomes of the research and experimentation. A hypothesis can be tested by conducting an experiment.

Observation – Using the data or information collected during the experiments and research scientist think critically about the evidence collected.

Results /Conclusion - This is where scientists bring together the research, experimentation, and observations they have recorded to see if their hypothesis was correct. At this stage they propose possible solutions and also decide if further inquiry, research, and experimentation is needed.

Communicate – Scientists present and share their results. At this point other scientists may try to repeat the experiment and peer review the results.

The scientific process and inquiry is a flexible process, scientist may move the steps around but they go through them all.

Pseudoscience – A collection of beliefs or practices mistakenly regarded as being based on scientific method or as science.



## Take Away Kit: Magnifying glass

### Bag Contents:

- 1 Magnifying glass

Have you ever wanted to look at the world up close? Here is your chance! This magnifying glass allows you to see things that you cannot see with your eyes alone. To test this out look at a leaf, and then look at the same leaf through the magnifying glass. Do you notice a difference? The magnifying glass makes the leaf appear larger or **magnified**. Try the same with different objects around your home and outside.

Remember to close one eye and look through the lens with the open eye for best results.

## At Home Experiment

To learn about **magnification** you can do this simple experiment at home.

You need:

Newspaper or a page with text on it

Plastic wrap

A little water

Lay your piece of text or newspaper flat on a table. Place a layer of plastic wrap over it.

Next drop a drop of water on the plastic wrap, and look at the letters through the water.

What do you notice? Is the text bigger or the same?

Sources:

<https://www.scholastic.com/teachers/lesson-plans/teaching-content/send-home-activities-magnificent-magnification/>

[https://science.education.nih.gov/supplements/webversions/processinquiry/guide/nih\\_doing-science.pdf](https://science.education.nih.gov/supplements/webversions/processinquiry/guide/nih_doing-science.pdf)