Ready to Homeschool — Six Month Countdown
www.hilarioushomeschooling.com

Week 22: Nature Study and Science

Incorporating Nature Study into your everyday life will provide a great foundation for later studies in advanced science topics. Learning to process information like scientists will also be of lifelong benefit.

- Human body systems and Health/Nutrition
- Zoology (animals and insects)
- Botany (plants, trees, flowers)
- Geology (studying rocks and volcanoes)
- Ecosystems and biomes (especially visible on trips to the zoo)
- Meteorology (weather patterns)
- Astronomy (stars, planets, constellations, outer space)
- Oceanography, limnology, hydrology, marine science (oceans, rivers, the water cycle)
- Microscopic organisms
- Origins (evolution vs. creation)
- Simple Machines (motion), Inventions, and Technology
- Magnets and Electricity
- Light and Sound Energy
- Heat Energy and measuring temperature changes
- The metric system
- The Scientific Method
- Scientific discoveries and theories by famous scientists
- States of Matter, Chemistry, and Atomic and Nuclear physics

Prepare throughout the preschool years — Keep it light, and follow their interests.
- Explore nature together — teach observation skills and model inquiry
- Read picture books that introduce science concepts

Goals in the early elementary years:
- Hands-on exploration and experiments — this is foundational for later "book-learning"
- Encourage curiosity
- Learning names of plants, insects, constellations, clouds, etc.
- Watch documentaries, physics demonstrations, etc.
- Lives of famous scientists

Later elementary/middle school years
- More formal study in any area of interest
- Understand opposing views behind evolution vs. creation debate
- Apply the Scientific Method to their own science projects
- Health, Nutrition, understanding of Human Body is helpful just before adolescence
- Family field trips to zoos, planetariums, or other areas of the country/world
- Aim for well-rounded science before high school — exposure to all categories listed above

High School/College years
- Master the metric system before or during 9th grade
- Usually THREE years of science is required in high school
- One year should include a lab component, so learn to write lab reports
- Physics relies heavily on understanding calculus — postpone serious study

For Week 24, we will be discussing *Teaching from Rest* by Sarah Mackenzie. This is a more recent release that helps homeschool moms come to grips with the fact that they cannot do it all, and gives advice on how to get rid of worry and anxiety. Use this link to purchase the book, and I will benefit as an Amazon affiliate: https://amzn.to/3BKTFkk

Resources:

(if you purchase through the suggested links, I will benefit as an Amazon affiliate)

Handbook of Nature Studies by Anna Botsford Comstock (1911)
This thick volume was designed to help public school teachers learn to incorporate Nature Study into their schoolday naturally.
https://amzn.to/3qACBeD
(It is now in public domain, so you can find it as a free PDF download as well.)

Field Guides

Such as….. Peterson Field Guides, Audubon, Smithsonian
These are usually pocket-size guides to identifying all sorts of creatures, rocks and minerals, seashells, trees, flowers. They aren't usually books you would read straight through — instead they are books to help you identify something that you encounter on a nature walk. Investing in a small library of these will help cultivate your family's awareness of the diversity in nature, and help everyone learn common and scientific names for what they find in the world around them.

Dover Coloring Books
Dover has a LARGE collection of coloring books that help kids slow down enough to absorb the information being presented. Specifically, there are coloring books that feature different species of animals and flowers — some kids will enjoy this more than others. This amazon link is for a coloring book on studying butterflies. The correct coloring (to match what is found in nature) is given on the inside front or back covers.
https://amzn.to/3CmgF9G

Knee High Nature by Pat Wishart and Dianne Hayley and Will Husby
You can find these on the second-hand market for Fall, Winter, and "Summer in Alberta" — they are filled with fun activities, games, songs, and poems that help you appreciate the outdoors with your little ones more.

Play with Me by Marie Hall Ets (1976)
There are SO MANY books that are great to read to kids about nature study but this one is absolutely precious — a great reminder that to see nature, you'll need to learn to sit still for a little while.
https://amzn.to/3qEHuDb

Home Science Tools
An online store to find curriculum AND science kits and equipment.
https://www.homesciencetools.com/

Resources:

(if you purchase through the suggested links, I will benefit as an Amazon affiliate)

Magic School Bus (aired on PBS from 1994-1997)
Books and animated episodes featuring fictional (and bizarre) classroom teacher Ms. Frizzle, covering several science concepts in an enjoyable format. It wouldn't suffice as an entire curriculum but it raises kids' curiosity. This is a list of episodes which you may (or may not) be able to find online or on DVD.
https://en.wikipedia.org/wiki/List_of_The_Magic_School_Bus_episodes

Wild Goose Company
These are fun ways to experiment with science. I think this company is out of business, but you can still find their used books and/or kits on the second-hand markets.

Home Science Adventures from Stratton House
These are fabulous little self-contained kits with accompanying worksheets to guide your 1st-7th grade student on their own "adventure" with a particular science concept. Choices include Astronomy, Birds, Magnetism, Microscopic Explorations, Insects & Bugs, and Light & Optics.
https://www.homeschoolscience.com/products.html

The New Way Things Work by David Macaulay
I love to use this book to teach about simple machines — the entire first section features a wooly mammoth encountering such things as levers, pulleys, and inclined planes. The rest of the pages explain how modern inventions use these simple machines in combination with others to do their jobs (can openers, CD players, car engines, etc.). Lots of pictures!!
https://amzn.to/3MTaDlI

Supercharged Science by Aurora Lipper
This is a powerhouse of a woman who is on a mission to make science concepts come alive for all students. Her e-Science classes are all online and pretty pricey, but she has done much of the work for you. There are a few free trial classes offered online, look under her "Free Stuff" tab on...
https://www.superchargedscience.com/about/

Real Science 4 Kids by Rebecca W. Keller, Gravitas Publications
Very readable but accurate chapters to help kids build their scientific knowledge. Workbooks are available for some texts.
https://gravitaspublications.com/our-bookstore/

Resources:

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College Prep Science by Greg Landry

Greg Landry is a scientist and homeschool dad. His science and ACT Prep classes can be taken LIVE (a Zoom-call-type experience once a week with homework) or Self-Paced (watching recordings and doing the work on your own). Classes available for grades 4-12. He also offers some in-person camps, specifically for Marine Science in Alabama.

https://www.collegeprepscience.com/classes

Janice VanCleave

Janice VanCleave has written over 50 books that are full of experiments that demonstrate scientific principles — she attempts to entice kids into studying science with hands-on projects that help them experience the Scientific Method in action.

A list of her books — https://www.biblio.com/janice-vancleave/author/27526

A resource website that she sponsors — https://homeschool.scienceprojectideasforkids.com/

TOPS Learning Systems by Ronald Jay Marson and Peg Nazari Marson

Short inquiry-based booklets that encourage science learning with minimal materials. Various levels and topics available.

https://topscience.org/

One Small Square series by Donald Silver and Patricia Wynne

These books are fabulous introductions to the concept of ecosystems around our globe — the idea that because of different environments, you will find different species of life inhabiting those environments. If you can only buy one, I would recommend "Backyard" because (if you live in America) chances are it will apply to your own backyard, which is the best place to start your nature studies.

One Small Square, Backyard — https://amzn.to/42tVgG5

God's Design for ____ by Richard and Debbie Lawrence,
sold by Answers in Genesis and also by Master Books

I used a few of the books from the original set, from the early 2000's, before it was revised. They were easily adaptable to a wide range of grade levels, and included great ideas for hands-on demonstrations of the concepts presented. I'm not sure how the updated versions compare.

https://answersingenesis.org/store/product/gods-design-set-fearfully-wonderfully-made/

Resources:

(if you purchase through the suggested links, I will benefit as an Amazon affiliate)

Inquisikids Discover and Do DVD series or streaming from Sonlight
These videos feature slightly goofy demonstrations of experiments that go along with Sonlight's science curriculum for the specified year. (You can still find used DVD's on the second-hand market, which could stand alone, but they are even better when paired with the specific resources used by Sonlight for that particular curriculum year.)

Exploring the World of _____ by John Hudson Tiner
This series put out by Master Books is helpful in understanding the development of the different branches of science and gives background knowledge and rabbit trails to explore. John Hudson Tiner has also authored many biographies of famous scientists.
Exploring the World of Chemistry — https://amzn.to/3P6A5qM
Exploring the World Around You — https://amzn.to/3ClMbVa
Exploring the World of Mathematics — https://amzn.to/42BNOZA
Exploring the World of Physics — https://amzn.to/3WVSvfD
Exploring the World of Biology — https://amzn.to/3oTTWyv
Exploring the World of Astronomy — https://amzn.to/43QeXJn
Exploring Planet Earth — https://amzn.to/3WY1nRS
Exploring the History of Medicine — https://amzn.to/3N0TaaV

Apologia by Jay Wile (and other authors)
This is a very respected name in homeschool science, with resources for all grades. You can also look for kits that correspond with all the labs for a certain year's course and order all of that as well, to minimize lab prep AND maximize the chance that you will actually DO the experiments.
https://www.apologia.com/

The 101 Series by Wes Olson
These DVD's present an entire year's worth of high school level science each. You would need to supplement them with suggested resources and projects, because the actual viewing time is anywhere from four to eleven hours. Very helpful frameworks for launching explorations. A digital PDF download (included on a disc) gives guidance and printable quizzes for each segment.
General Science 101 — https://amzn.to/3P2tGwA
Biology 101 — https://amzn.to/3CkJKCh
Chemistry 101 — https://amzn.to/3X25lZY
Physics 101 — https://amzn.to/3P4aK0D