Scope & Sequence

A Reason For® Science
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A NEW PARADIGM

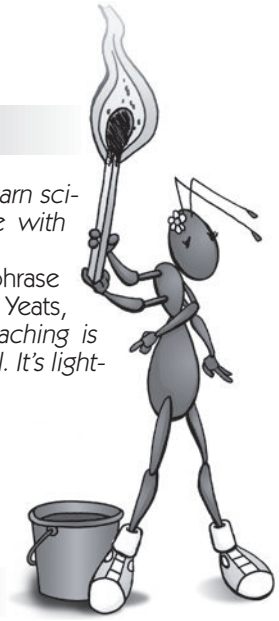
A Reason For® Science is designed for children — young minds created by an infinite God with an unlimited capacity to think, to learn, to explore, and to discover!

Because of its emphasis on how children really learn, ***A Reason For® Science*** uses a different paradigm from traditional textbooks. Why? In an effort to address standards and accountability, many of today's science textbooks get learning backwards. They focus primarily on building a knowledge base, assuming students will later attach meaning to memorized facts. The problem is that very few elementary students master information that is presented this way because they never become engaged with the material.

By contrast, ***A Reason For® Science*** is based on the premise that learning science is an ACTIVE process. It is *"something children do, not something done to them."*[1]

According to the **National Science Education Standards**, *". . . active science learning means shifting emphasis away from teachers presenting information and covering science topics. The perceived need to include all the topics and information . . . is in direct conflict with the central goal of having students learn scientific knowledge with understanding."*[2]

Or to paraphrase William Butler Yeats, *"Great science teaching is not filling up a pail. It's lighting a fire!"*



INQUIRY-BASED LEARNING

A Reason For® Science is designed to teach basic Life, Earth, and Physical Science concepts through fun, hands-on activities. Its focus is to make learning both fun and meaningful.

But hands-on activities by themselves are never enough. In order to truly master a concept, students must have "minds-on" experiences as well! This means actively engaging the material through a variety of methods such as group discussion, problem solving, and journaling. It also requires thought-provoking questions that help develop higher-level cognitive skills. The weekly format of ***A Reason For® Science*** is designed to reflect this inquiry-based model.

According to the **National Science Education Standards**, *"Inquiry is central to science learning. When engaging in inquiry, students describe objects and events, ask questions, construct explanations, test those explanations against current scientific knowledge, and communicate their ideas to others . . . In this way, students actively develop their understanding of science by combining scientific knowledge with reasoning and thinking skills."*[3]

Since different students achieve understanding in different ways and to different degrees, the flexible format of ***A Reason For® Science*** also encourages multiple learning styles and allows for individual differences. Each activity challenges students to develop their own unique skills, and encourages them to think of creative solutions.

NATIONAL STANDARDS

The "National Standards" referred to in this Scope & Sequence are from the **National Science Education Standards**[1]. More specifically, they reflect the "K-4 Science Content Standards" (p.121 - 142) and "5-8 Science Content Standards" (p. 143 - 172).

Teacher Guidebooks include a list of the content standards that relate to each individual lesson. References are based on the NSES alphabetic format, plus a numeric code to indicate the bulleted sub-topic.

For example, **C1** in a fourth grade lesson, would indicate Content Standard **C** and sub-topic **1**. (A detailed description of the **C1** content standard is found on pages 127 - 229 of the **Standards**.)

As noted above, lower grade and upper grade standards are found in different sections. A **C1** reference for a third grade lesson, for example, would be found on page 127 (characteristics of organisms). By contrast, a **C1** reference for a seventh grade lesson would be found on page 155 ("structure and function of living systems").

[1] *National Science Education Standards*, 1999. Washington, D.C.: National Academy Press. (p. 2); [2] *Ibid.* (p. 20); [3] *Ibid.* (p. 2)

Level A (Grade 1)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Basic Needs	To explore basic needs of plants and animals	C1 - Characteristics of Organisms
2	Life Science	Plant Structure/Function	To explore the structure and function of plant parts	C1 - Characteristics of Organisms
3	Life Science	Animal Structure/Function	To explore the structure and function of animal coverings	C1 - Characteristics of Organisms
4	Life Science	Life Cycles (larva)	To explore the larva stage of a moth's life cycle	C2 - Life Cycles of Organisms
5	Life Science	Life Cycles (pupa)	To explore the pupa stage of a moth's life cycle	C2 - Life Cycles of Organisms
6	Life Science	Life Cycles (adult)	To explore the adult stafe of a moth's life cycle	C2 - Life Cycles of Organisms
7	Life Science	Camouflage	To explore how colorization and shape help survival	C3 - Organisms & Environments
8	Life Science	Habitats	To explore how creatures interact with their environment	C3 - Organisms & Environments
9	Life Science	Pollutants	To explore how pollutants impact environments	C3 - Organisms & Environments
10	Earth Science	Earth Materials	To explore how "natural" and "manufactured" differ	D1 - Properties of Earth Materials
11	Earth Science	Rocks	To explore basic characteristics of rocks	D1 - Properties of Earth Materials
12	Earth Science	Fossils	To explore how "mold fossils" were created	D1 - Properties of Earth Materials
13	Earth Science	Solar System	To explore relationships between solar system objects	D2 - Objects in the Sky
14	Earth Science	Eclipses	To explore how solar and lunar eclipses occur	D2 - Objects in the Sky
15	Earth Science	Solar Energy	To explore how color reflects or absorbs sunlight	D2 - Objects in the Sky
16	Earth Science	Earth Rotation	To explore how Earth's rotation causes day and night	D3 - Changes in Earth and Sky
17	Earth Science	Moon Phases	To explore how the Moon's movement relates to months	D3 - Changes in Earth and Sky
18	Earth Science	Seasons	To explore how Earth's movement relates to seasons	D3 - Changes in Earth and Sky
19	Physical Science	States of Matter	To explore Earth's three most common states of matter	B1 - Properties of Objects & Materials
20	Physical Science	Changes in Matter	To explore how matter can change states	B1 - Properties of Objects & Materials
21	Physical Science	Bonds	To explore how bonds between atoms hold things together	B1 - Properties of Objects & Materials
22	Physical Science	Surface Tension	To explore how water molecules create surface tension	B1 - Properties of Objects & Materials
23	Physical Science	Properties of Matter	To explore mixing two colors to make a third color	B1 - Properties of Objects & Materials
24	Physical Science	Density	To explore how density affects matter	B1 - Properties of Objects & Materials
25	Physical Science	Sound	To explore how sound is created by vibration	B2 - Position & Motion of Objects
26	Physical Science	Pitch	To explore how changing vibration changes sound	B2 - Position & Motion of Objects
27	Physical Science	Sound & Density	To explore how density affects the speed of sound	B2 - Position & Motion of Objects
28	Physical Science	Newton's 3rd Law	To explore the concept of action/reaction	B2 - Position & Motion of Objects
29	Physical Science	Flight	To explore how forces relate to flight	B2 - Position & Motion of Objects
30	Physical Science	Simple Machines	To explore how the direction of a force can be changed	B2 - Position & Motion of Objects
31	Physical Science	Refraction	To explore how light can be bent by a lens	B3 - Light, Heat, Electricity, Magnetism
32	Physical Science	Refraction/Reflection	To compare and contrast refraction and reflection	B3 - Light, Heat, Electricity, Magnetism
33	Physical Science	Friction	To explore the relationship between friction and heat	B3 - Light, Heat, Electricity, Magnetism
34	Physical Science	Static Electricity	To explore how atoms relate to static electricity	B3 - Light, Heat, Electricity, Magnetism
35	Physical Science	Magnetism 1	To explore basic properties of magnets and magnetism	B3 - Light, Heat, Electricity, Magnetism
36	Physical Science	Magnetism 2	To explore practical applications of magnetism	B3 - Light, Heat, Electricity, Magnetism