Scope & Sequence

A Reason For® Science

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A NEW PARADIGM

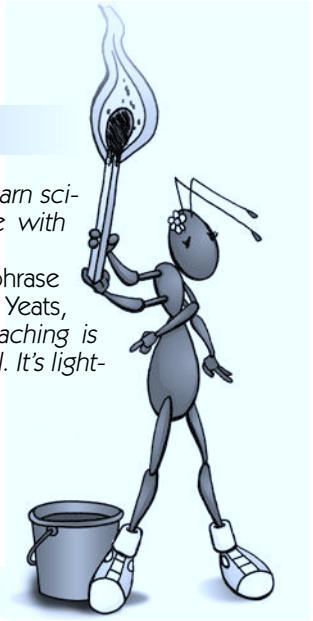
A Reason For® Science is designed for children — young minds created by an infinite God with an unlimited capacity to think, to learn, to explore, and to discover!

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 D (Grade 4)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Germination	To explore growth in plants	A1, A2, B1, B2, B3, C1, C2, C3, E3, F2, F3, F4, G1
2	Life Science	Classification	To explore how characteristics are used for indentification	A1, A2, C1, C3, E3, F1, F2, F3, G1
3	Life Science	Animal Characteristics	To explore how a bird's feathers repel water	A1, A2, A3, B1, C1, C3, E3, F2, F4, G1
4	Life Science	Ecosystems	To explore the predator/prey relationship	A1, A2, C1, C2, C3, E3, F2, F3, F4, G1,
5	Life Science	Plant Structure	To explore images as a scientific tool	A1, A2, C1, C2, C3, E3, F2, F3, F4, G1
6	Life Science	Food Preservation	To explore how water affects spoilage	A1, A2, B1, B3, C1, C2, C3, E3, F1, F2, F3, F4, G1
7	Life Science	Body Function	To explore the sense of touch	A1, A2, B2, C1, C3, E3, F1, G1
8	Life Science	Body Function	To explore the nervous system	A1, A2, B2, C1, C3, E3, F1, G1
9	Life Science	Body Structure	To explore the major bones of the body	A1, A2, B2, C1, C3, E3, F1, G1
10	Physical Science (Forces)	Crystals	To explore changes in matter and forces that cause them	A1, A2, B1, B2, B3, D1, E3, G1
11	Physical Science (Forces)	Surface Tension	To explore water molecule attraction	A1, A2, B1, B2, D1, E3, G1
12	Physical Science (Forces)	Air Pressure	To explore air as a form of matter	A1, A2, B3, B4, D1, E3, G1
13	Physical Science (Forces)	Gravity	To explore how gravity works	A1, A2, B1, B2, D1, E3, G1
14	Physical Science (Forces)	Inertia	To explore intertia and movement	A1, A2, B1, B2, E3, F1, G1
15	Physical Science (Forces)	Torque	To explore how torque can change the direction of force	A1, A2, B1, B2, E1, E2, E3, F5, G1
16	Physical Science (Forces)	Buoyancy	To explore how things float	A1, A2, B1, B2, B3, E3, G1
17	Physical Science (Forces)	Force Transfer	To explore how forces can be moved	A1, A2, B1, B2, B3, E1, E2, E3, F5, G1
18	Physical Science (Forces)	Flight	To explore how forces allow flight	A1, A2, B1, B2, E1, E2, E3, F5, G1
19	Earth Science	Air Pressure	To explore air pressure as a force	A1, A2, B1, B2, D1, D3, E1, E2, E3, G1
20	Earth Science	Air Pressure	To explore the effects of air pressure	A1, A2, B1, B2, B3, D1, D3, E3, G1
21	Earth Science	Barometers	To explore how air pressure is measured	A1, A2, B1, B2, B3, D1, D2, D3, E1, E2, E3, F4, F5, G1
22	Earth Science	Water Cycle	To explore physical changes in water	A1, A2, B1, B2, B3, D1, D3, E3, F4, G1
23	Earth Science	Geology	To explore sedimentary rock	A1, A2, B1, B2, D1, D3, E3, F4, G1
24	Earth Science	Earth's Structure	To explore core sampling	A1, A2, B1, B2, D1, D3, E1, E2, E3, F4, G1
25	Earth Science	Volcanoes	To explore the action of volcanoes	A1, A2, B1, B2, D1, D3, F4, G1
26	Earth Science	Fossils	To explore fossilization	A1, A2, B1, B2, D1, D3, E3, F4, G1
27	Earth Science	Crystallization	To explore how groundwater forms cave formations	A1, A2, B1, B2, D1, D3, E3, F4, G1
28	Physical Science (Energy/Matter)	Wave Structure	To explore the parts and functions of waves	A1, A2, B1, B2, B3, E2, E3, F5, G1
29	Physical Science (Energy/Matter)	Refraction	To explore properties of light	A1, A2, B1, B2, B3, E3, G1
30	Physical Science (Energy/Matter)	Lenses	To explore how lenses affect images	A1, A2, B1, B2, B3, E2, E3, F1, F5, G1
31	Physical Science (Energy/Matter)	Sound	To explore how sound is made	A1, A2, B1, B2, B3, E2, E3, F5, G1
32	Physical Science (Energy/Matter)	Static Electricity	To explore static electricity	A1, A2, B1, B2, B3, E2, E3, G1
33	Physical Science (Energy/Matter)	States of Matter	To explore changes in states of matter	A1, A2, B1, B3, D1, E3, G1
34	Physical Science (Energy/Matter)	Endothermic Change	To explore endothermic change	A1, A2, B1, B3, D1, E3, F3, G1
35	Physical Science (Energy/Matter)	Exothermic Change	To explore exothermic change	A1, A2, B1, B3, D1, E3, F3, G1
36	Physical Science (Energy/Matter)	Indicators	To explore how an acid or base affects an indicator	A1, A2, B1, B3, D1, E3, F4, F5, G1