

# Science Companion<sup>®</sup>

## Parallels in Instructional Design

### Everyday Mathematics

### Science Companion

#### High Expectations for All Students

- All children can be successful mathematical thinkers.
- Children are natural scientists because they learn by probing and questioning the world around them.

#### Ongoing Idea & Skill Development

- Concepts and skills build in complexity over the course of the year.
- Concepts and skills are revisited throughout the year in "Ongoing Learning & Practice" section of lessons.
- Modules are organized into clusters, where a "big idea" is examined from several angles and experiences.
- "Big ideas" build on one another within and across modules.
- Process skills are introduced and practiced in several modules.

#### Balance Among Content Strands

- Six content strands are balanced within a grade and carefully articulated across the grades.
- See the "Everyday Mathematics Goals" table in Assessment Handbook for a detailed overview.
- Three content strands are offered at each grade level: Life Science, Earth Science, and Physical Science.
- Science process skills are integrated in each module.
- The "I Wonder" Circle helps teachers balance the various aspects of "doing science," showing that all parts of the process are important.

#### Problem Solving: Multiple Methods & Strategies

- After solving a problem, children share strategies to getting to an answer in a whole class discussion.
- Different approaches to the same type of problem are continually introduced and explored.
- Activities cover a wide range of experiences and skills.
- Children complete explorations in small groups, having unique experiences with the materials at hand. They then share their results and strategies with the whole class.
- Children can explore materials and try their ideas out in the Science Center.
- Children use direct observation, modeling, interpretation of collected data, and discussion to form conclusions and to direct further inquiry.

## Concrete Modeling to Teach Concepts

- Number models and situational diagrams are used to informally introduce math concepts in a concrete fashion, before symbolic notation is introduced and used.
- For example: “Parts-and-total” diagrams model addition and subtraction problems. “What’s my rule?” models and introduces the idea of functions. “Name-collection boxes” help children learn equivalent names for numbers.
- Children use models to represent things that are too big, small, fast, slow, far away, or dangerous to observe in the real world.
- See, for example: “Modeling the Sun in Fall,” “Modeling the Moon’s Cycle,” in the *Our Solar System* module; “Light Is Everywhere,” “Modeling How Light Travels” in the *Light* module; “The Nutrient Game” in the *Nature’s Recycler’s* module.

## Cross-Curricular Connections

- Rich connections to science in the use of measurement, data collection and data analysis.
- Literacy connections supported through vocabulary practice, the Student Reference Books, and recommended trade book on math topics.
- History, social studies and geography are linked through Projects and enrichment activities.
- Children’s *Science Notebooks* for each module require children to use the tools of mathematics, language arts, and sketching to record their work in science.
- Each module introduces vocabulary and related reading for the topic at hand.
- Modules for later grades include a *Student Reference Book* of readings integrated with the current science content.
- Measurement, data gathering, data analysis, and modeling provide ample mathematics connections at grade appropriate levels.
- Each lesson contains Extensions to take the science content into areas of mathematics, language arts, social studies, art, or technology.
- Online web links point to online tools for further exploration.

## Built-in Professional Development for Teachers

- “Mathematical Background” section at the beginning of each unit highlights main content ideas and instructional priorities.
- The “Teacher Reference Manual” provides detailed suggestions for classroom management, content information, and teaching problem-solving skills. The relevant sections are listed at the beginning of each unit.
- Notes to teachers within lessons point out differentiation options and “Adjusting the Activity” tips
- “Teacher Background Information” for each module gives teacher the science foundation needed to feel confident teaching a new science topic in their classroom.
- “Teacher Notes” and “Management Notes” within each lesson give teachers information about science content, student misconceptions, or management tips at the point of instruction.
- Guidelines for class discussions within lessons ensure that key questions and concepts are readily available.
- *Teacher Reference Materials* contain suggestions for classroom setup and teaching strategies.