

TEACHER NOTES

Educational Standards

Five categories of NSTA content standards are addressed in the Space Science books and Teacher Resource.

- History and Nature of Science
- Science in Personal and Social Perspectives
- Science as Inquiry
- Earth and Space Science
- Science and Technology

Three thematic strands of NCSS curriculum standards are also addressed.

- Time, Continuity, and Change
- People, Places, and Environments
- Science, Technology, and Society

Space Science Book Series

Exploring Space

Space is the region beyond Earth's atmosphere. Since ancient times, people have looked at the night sky and wondered what was there. Space exploration has revealed Earth's place in the solar system. In the future, space exploration could put people on Mars.

The Moon

People have observed the phases of the Moon for centuries. With modern space tools, people have traveled to and walked on the Moon. Clues about the origin of the Moon are found in Moon rocks.

Planets

From the gas giants to frozen Pluto, each of the planets in our solar system is unique. The conditions on each planet are greatly influenced by the orbit it takes around the Sun.

Stars

How does a star begin? How does its life end? Why are stars different colors? Since ancient star-gazers mapped the constellations, people have been curious about the stars.

Key Characteristics of the Space Science Teacher Resource

1. Rationale

The Science Matters: Space Science Teacher Resource has been developed to accompany the Space Science book series. The guide addresses what teachers teach, how they teach it, and why. The five lesson plans include core activities and other activities for differentiated learning, through which students will explore our solar system. These activities include group work, research, and interdisciplinary projects that will help students meet important knowledge and skill outcomes in U.S. curricula for Grades 3-6. Suggested activity times are presented on page 4.

2. Educational Standards

The Space Science books and accompanying Teacher Resource will help your students meet key National Science Education Standards for Grades K–12, as set out by the National Science Teachers Association (NSTA), in addition to curriculum standards defined by the National Council for the Social Studies (NCSS). Relevant knowledge and skill standards are listed in the Master Chart of Contents and under Teacher Notes.

3. Using the Space Science Books

The Space Science 6-book series introduces young learners to our solar system. These books discuss location of objects, discoveries in the solar system, space exploration, and differences in these various objects in the Universe. Additional sources are listed to guide students in further research. Students can use the Table of Contents or Index to find specific information on a space object. A glossary of terms is also provided at the end of each book. See the Teacher Notes on pages 2–3 for a summary of the Space Science books.

4. Skills Development

All lessons focus on higher-level thinking skills as outlined by Bloom's Taxonomy of educational objectives. The activities provide opportunities for students to analyze, synthesize, and evaluate information and concepts about space. Lesson 2 emphasizes collaborative learning; Lesson 3 focuses on developing of effective research skills; Lesson 4 emphasizes synthesizing information; and in Lesson 5 students evaluate information. Strategies for addressing reading skills are listed in Teacher Notes and integrated into activities. These strategies are based on best practices for reading strategies as outlined by the National Institute for Literacy.

Master Chart of Contents

Core Activity	Differentiated Learning	Materials	Science Curriculum Connections
LESSON 1 Introducing Space, Pages 6–7			
Using the Space Map (2 x 45 min)	Integration What Do I Want to Know About Space? (ongoing)	Core Activity Space Map, Space Science 6-book series, BLM 1 What Do I Know about Space?, chalkboard, whiteboard, or flipchart paper, chalk or markers, filtered Internet access, journals, other library resources Integration Space Map, paper or journals, pencils, empty shoebox	NSTA, K–12 Earth and Space Science Students learn about objects in the sky and changes in earth and sky.
LESSON 2 Group Work, Pages 8–10			
Out and About in the Universe (ongoing)	Integration What's in a Name? (15 min) Enrichment Where Did the Seasons Go? (20 min)	Core Activity Space Map, Space Science 6-book series, BLM 2 Out and About in the Universe, construction paper, large tagboard or poster paper, markers, glue, other materials as needed by students, journal Integration Paper and pencil or markers	NSTA, K–12 Earth and Space Science Students learn about Earth's changing seasons.
LESSON 3 Research, Pages 11–13			
Becoming a Space Expert (ongoing)	Integration Pick a Probe (3 x 30 min) Enrichment Calling All Astronauts! (2 x 30 min) Hands On Creating New Constellations (45 min)	Core Activity Space Map, Space Science 6-book series and other library resources, filtered Internet access, BLM 3 Integration Space Science 6-book series or other library resources, filtered Internet access, paper, pencil Enrichment Space Science 6-book series and other library resources, filtered Internet access Hands On Black construction paper, tag board, sharp pencil, white chalk or white crayon, flashlight, tape	NSTA, K–12 History and Nature of Science Students learn about the job of an astronaut. Earth and Space Science Students learn about objects in space.
LESSON 4 Synthesis, Pages 14–16			
Time to Blast Off! (ongoing)	Integration A Day in the Life of an Astronomer (3 x 30 min) Enrichment Mythology of the Stars (2 x 40 min) Hands On Just Like an Astronomer (2 x 40 min)	Core Activity Space Map, Space Science 6-book series and other library resources, Internet, construction paper, markers, or any other materials required for student projects Enrichment Space Science book <i>Stars</i> , other library resources, filtered Internet access Hands On Space Science books, <i>Telescopes</i> or <i>The Sun</i> ; BLM 4 What Astronomers Use; materials listed on page 21 of the Space Science books	NSTA, K–12 Science as Inquiry Students recognize the relationship between explanation and evidence. Students understand the science of the natural world, which includes the capacity to reason with knowledge.
LESSON 5 Evaluation, Pages 17–19			
Planning a Space Mission (4 x 40 min)	Integration A Letter to Astronauts (2 x 20 min) Enrichment Astronaut Biographies (2 x 30 min) Hands On Earth-Friendly Spacecraft (ongoing)	Core Activity Space Science 6-book series, BLM 5, BLM 1, Accelerated Reader quizzes on space, poster paper or other materials for creating visual aids Integration Space Science 6-book series, other library resources, filtered Internet access, paper, envelopes Enrichment Library resources, Space Science 6-book series, filtered Internet access, paper Hands On Any type of recyclable material students bring from home, glue, tape, paper, scissors, markers	NSTA, K–12 Science and Technology Students gain understanding about science and its impact on technology.

Reading Levels

Social Studies Curriculum Correlations
<p>NCSS, K–12 Science, Technology, and Society Students learn about the relationships among science, technology, and society.</p>
<p>NCSS, K–12 People, Places, and Environments Students learn about the features and environment of space.</p>
<p>NCSS, K–12 People, Places, and Environments Students learn about people who work in space.</p>
<p>NCSS, K–12 Time, Continuity, and Change Students learn how scientific discoveries change over time and how they impact society.</p>
<p>NCSS, K–12 Science, Technology, and Society Students learn how scientific and technological advances affect society.</p>

Book Title	Fountas-Pinnell	Lexile	ATOS	Interest
<i>Exploring Space</i>	M	720	4.7	3–6
<i>The Moon</i>	M/N	640	3.8	3–6
<i>Planets</i>	M/N	720	4.1	3–6
<i>Stars</i>	M	600	4.0	3–6
<i>The Sun</i>	M	630	4.0	3–6
<i>Telescopes</i>	M/N	720	4.7	3–6

Fountas-Pinnell

In their work on guided reading, Irene C. Fountas and Gay Su Pinnell describe the characteristics of books at 26 increasing reading levels, from A to Z. These levels correspond to approximate grade-level ranges, rather than specific grades. In the Fountas-Pinnell system, levels M/N are suitable for Grades 2-3 and up. Fountas-Pinnell leveling takes into account such features as sentence complexity, text structure, vocabulary, content, layout, and visuals.

Lexile

Lexile measures are based on the Lexile Framework for Reading developed by MetaMetrics Inc. The framework provides a scientific approach for measuring reading levels. The Lexile scale is a common scale for readers and texts with measures from 200L (beginning-reader material) to above 1700L (advanced text). Lexile measures take into account semantic difficulty (word frequency) and syntactic complexity (sentence length).

ATOS

ATOS readability levels measure the textual difficulty of books based on the ATOS Readability Formula for Books from Renaissance Learning, Inc. ATOS readability levels indicate the most difficult level of text a student can comprehend expressed as a subset of a grade level. Readability levels are meant to be used in conjunction with interest levels of texts and students' reading levels in order to match books to students. The ATOS formula is based on statistics on student book-reading and analysis of entire books. Accelerated Reader quizzes can be used to assess student reading-levels.

Interest

Interest levels are publisher recommendations about the suitability of a book's content for a particular grade level. The suggested interest levels take into account the sophistication and maturity level of content, ideas, and themes.

Further information about reading levels of the books in the Space Science series can be found at www.titlewave.com.