

Raising A Reader (RAR) offers a variety of age and developmentally appropriate STEM Book Collections carefully curated to expose and introduce families and children to developmentally appropriate concepts in science, technology, engineering, and math and to begin engaging children in these fields at a young age through literacy.

Each collection contains children's books in each of the four (4) STEM categories: Science, Technology, Engineering, and Math. Books were selected based on early childhood content and performance expectations as described in the Head Start Child Development and Early Learning Framework (2012), Next Generation Science Standards (2013) and Common Core Math Standards (2010) for grades K-2.



WHY OFFER THE RAISING A READER STEM COLLECTION?

According to the Next Generation Science Standards (2013), students should be able to demonstrate proficiency in gathering, describing, and using information about the natural and designed worlds by the end of fifth grade. In order to do so, students in grades K-2 should begin to learn how to recognize patterns, develop an understanding of core STEM ideas, and formulate answers to questions about the world around them.

To help young children begin to develop their understanding of science, technology, engineering, and math, Raising A Reader has created a STEM collection of books that parents can use with their children at home to help engage in discussions around STEM concepts.

On the inside of each Raising A Reader STEM title, parents will find a STEM Bookplate that identifies which of the four STEM categories a particular book title belongs to. The STEM Bookplate also provides a simple definition about what the STEM category is, outlines early childhood STEM concepts that can be found in that book, and frames simple activity suggestions that parents can use to engage their children in a STEM focused discussion while engaging in dialogic reading.



THE RAISING A READER STEM COLLECTIONS

Raising A Reader currently offers five (5) STEM Book Collections as Book Only Sets and Supplemental Building Blocks. At this time, all the STEM sets are available in English and all paperback titles come with a Kapco laminate cover for durability.

The Book Only Collections contain 20 high quality children's books and include 5 titles in each of the four (4) STEM categories. Book Only Collections are created to add variety to book rotations. The Book Only Collections available are:

- 0-3 STEM (mixture of board books, paperbacks, and hardcovers)
- PreK STEM (mixture of paperbacks and hardcovers)

The Supplemental Building Block (SBB) Collections contain 15 high quality children's books and include 4-5 titles in each of the four (4) STEM categories. Each SBB was created to build upon the Raising A Reader Foundation Sets and comes with 5 Red Book Bags and tags, 5 Blue Library Bags and tags, and 5 Read Aloud Parent DVDs. The SBBs available are:

- Kindergarten STEM (mixture of paperbacks and hardcovers)
- Grade 1 STEM (mixture of paperbacks and hardcovers)
- Grade 2 STEM (mixture of paperbacks and hardcovers)

HOW IS STEM DEFINED IN EARLY CHILDHOOD¹?

What is Science?

- Science is a way of thinking.
- Science is observing and experimenting, making predictions, sharing discoveries, asking questions, and wondering how things work.

What is Technology?

- Technology is a way of doing.
- Technology is using tools, being inventive, identifying problems, and making things work.

What is Engineering?

- Engineering is a way of doing.
- Engineering is solving problems, using a variety of materials, designing and creating, and building things that work.

What is Math?

- Math is a way of measuring.
- Math is counting, sequencing and ordering, creating and finding patterns, and exploring shapes, volume, and size.

WHAT KIND OF CONTENT/CONCEPTS DOES THE RAR STEM COLLECTIONS INCLUDE?

A high quality early children's book about Science:

- Introduces young children to what scientists do (i.e. ask questions, conduct experiments, solve problems, etc.)
- Exposes children to three disciplinary core ideas: physical sciences, life sciences, and earth and space science.
- Has accurate facts about animals and their environments.

A high quality early children's book about Technology:

- Help children understand that “technology” is not limited to just computers, cell phones, and televisions.
- Introduces different ways that tools can be used to help people do things better or more easily.
- Encourages children to think about how developing tools can solve problems.

¹ Adapted from Boston Children's Museum (2013). STEM Sprouts Teaching Guide.

A high quality early children's book about Engineering:

- Introduces young children to explore how things are constructed and work.
- Encourages young children to think about how they can make things work differently or better.

A high quality early children's book about Math:

- Introduces ideas about numbers, quantity, and spatial relationships.
- Helps develop the ability to count, compare quantities, and understand position (i.e. first, last, front, near, far, etc.)
- Helps children think about how to sort and categorize objects by their attributes.

Each Raising A Reader STEM Collection contains children’s books in each of the four (4) STEM categories: Science, Technology, Engineering, and Math. Books were selected based on early childhood content and performance expectations as described in the Head Start Child Development and Early Learning Framework (2012), Next Generation Science Standards (2013) and Common Core Math Standards (2010) for grades K-2.

HEAD START CHILD DEVELOPMENT AND EARLY LEARNING FRAMEWORK

Mathematics Knowledge and Skills:

Number Concepts and Quantities

The understanding that numbers represent quantities and have ordinal properties (number words represent a rank order, particular size, or position in a list).

- Recognizes numbers and quantities in the everyday environment.
- Recites numbers in the correct order and understands that numbers come “before” or “after” one another.
- Associates quantities and the names of numbers with written numerals.

Geometry and Spatial Sense

The understanding of shapes, their properties, and how objects are related to one another.

- Recognizes and names common shapes, their parts, and attributes.
- Compares objects in size and shape.
- Understands directionality, order, and position of objects, such as up, down, in front, behind.

Patterns

The recognition of patterns, sequencing, and critical thinking skills necessary to predict and classify objects in a pattern.

- Sorts, classifies, and serializes (puts in a pattern) objects using attributes, such as color, shape, or size.
- Recognizes, duplicates, and extends simple patterns.

Measurement and Comparison

The understanding of attributes and relative properties of objects as related to size, capacity, and area.

- Compares objects using attributes of length, weight and size (bigger, longer, taller, heavier).
- Orders objects by size or length.

Science Knowledge and Skills:

Scientific Skills and Methods

The skills to observe and collect information and use it to ask questions, predict, explain, and draw conclusions.

- Uses senses and tools, including technology, to gather information, investigate materials, and observe processes and relationships.
- Observes and discusses common properties, differences, and comparisons among objects.
- Describes and discusses predictions, explanations, and generalizations based on past experience.

THE K-2 NEXT GENERATION SCIENCE STANDARDS

Asking Questions and Defining Problems

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. (2-ESS2-3)

ALIGNMENT WITH COMMON CORE MATH STANDARDS

Kindergarten

- CCSS.MATH.CONTENT.K.CC.A.1
Count to 100 by ones and by tens.
- CCSS.MATH.CONTENT.K.CC.A.2
Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- CCSS.MATH.CONTENT.K.CC.B.4
Understand the relationship between numbers and quantities; connect counting to cardinality.
- CCSS.MATH.CONTENT.K.CC.C.6
Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
- CCSS.MATH.CONTENT.K.MD.A.1
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- CCSS.MATH.CONTENT.K.MD.A.2
Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.
- CCSS.MATH.CONTENT.K.MD.B.3
Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

CCSS.MATH.CONTENT.K.G.A.1

Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

REFERENCES

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