



ARKANSAS

K-12 SCIENCE STANDARDS

EDUCATION FOR A NEW GENERATION

Grade 2

2015

Grade 2 Learning Progression by Topic

Grade 2		
PHYSICAL SCIENCES	LIFE SCIENCES	EARTH and SPACE SCIENCES
Structure and the Properties of Matter	Interdependent Relationships in Ecosystems	Earth's Systems: Processes that Shape the Earth
2-PS1-1	2-LS2-1	2-ESS1-1
2-PS1-2	2-LS2-2	2-ESS2-1
2-PS1-3	2-LS4-1	2-ESS2-2
2-PS1-4		2-ESS2-3
ENGINEERING, TECHNOLOGY, and APPLICATIONS of SCIENCE Engineering Design 2-ETS1-1, 2-ETS1-2, 2-ETS1-3		

Grade 2 Learning Progression by Disciplinary Core Idea

Grade 2				
PHYSICAL SCIENCES	LIFE SCIENCES		EARTH and SPACE SCIENCES	
Matter and Its Interactions	Ecosystems: Interactions, Energy, and Dynamics	Biological Evolution: Unity and Diversity	Earth's Place in the Universe	Earth's Systems
2-PS1-1	2-LS2-1	2-LS4-1	2-ESS1-1	2-ESS2-1
2-PS1-2	2-LS2-2			2-ESS2-2
2-PS1-3				2-ESS2-3
2-PS1-4				
ENGINEERING, TECHNOLOGY, and APPLICATIONS of SCIENCE Engineering Design 2-ETS1-1, 2-ETS1-2, 2-ETS1-3				

Second Grade Standards Overview

The Arkansas K-12 Science Standards are based on *A Framework for K-12 Science Education* (NRC 2012) and are meant to reflect a new vision for science education. The following conceptual shifts reflect what is new about these science standards. The Arkansas K-12 Science Standards

- reflect science as it is practiced and experienced in the real world,
- build logically from Kindergarten through Grade 12,
- focus on deeper understanding as well as application of content,
- integrate practices, crosscutting concepts, and core ideas, and
- make explicit connections to literacy and math.

Science and Engineering Practices

Students are expected to demonstrate grade-appropriate proficiency in

- developing and using models,
- planning and carrying out investigations,
- analyzing and interpreting data,
- constructing explanations and designing solutions, and
- engaging in argument from evidence, and obtaining, evaluating, and communicating information.

Students are expected to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

Crosscutting Concepts

Students are expected to demonstrate grade-appropriate understanding of

- patterns,
- cause and effect,
- energy and matter,
- structure and function,
- stability and change, and
- influence of engineering, technology, and science on society and the natural world as organizing concepts for the disciplinary core ideas.

Disciplinary Core Ideas

Students are expected to continually build on and revise their knowledge of

- PS1 - Matter and Its Interactions,
- LS2 - Ecosystems: Interactions, Energy, and Dynamics,
- LS4 - Biological Evolution: Unity and Diversity,
- ESS1 - Earth's Place in the Universe,
- ESS2 - Earth's Systems, and
- ETS1 - Engineering Design in a K-2 developmental learning progression.

The (PS) performance expectations in second grade help students formulate answers to the questions, “How do the properties of materials determine their use?” and “How are materials similar and different from one another?” Students develop an understanding of observable properties of materials at this level through analysis and classification of different materials.

Life Science (LS)

The (LS) performance expectations in second grade help students explore the questions, “What do plants need to grow?” and “How many types of organisms live in a place?” Students are expected to develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students compare the diversity of life in different habitats.

Earth and Space Science (ESS)

The (ESS) performance expectations in second grade help students investigate the questions, “How does the surface of the Earth change over time?”, and “What are the different land forms and bodies of water?” Students apply their understanding of the idea that wind and water can change the shape of the land and compare design solutions to slow or prevent such changes. Students use information and make models to identify and represent landforms and bodies of water found on Earth.

Engineering, Technology, and Applications of Science (ETS)

Engineering design performance expectations in the primary grades help students recognize that creative energy can be a means to solve problems and achieve goals through a systematic process. Children are born with a creative urge to design and build things and it is the task of the teacher to channel this natural tendency. Connections with the other science disciplines help students develop these capabilities in various contexts. The engineering design process involves three stages:

- **Defining engineering problems** begins in Kindergarten as students learn that a situation people want to change can be thought of as a problem that can be solved. By the time they leave second grade students should be able to ask questions and make observations to gather information about the problem so they can envision an object or a tool that would solve it.
- **Designing possible solutions to engineering problems** progresses from the problem definition stage. One of the most challenging aspects of this stage is to keep students from immediately implementing the first solution they think of and to think it through before acting. Students should sketch their ideas or make a physical model to help shape their ideas to meet the requirements of the problem.
- **Comparing different solutions** involves testing each one to see how well it solves a problem or achieves a goal. Consumer product testing is a good model of this capability. Although students in this grade range should not be held accountable for designing controlled experiments, they should be able to think of ways to compare two products to determine which is better for a given purpose.

By the time students leave the second grade they should be able to achieve all three performance expectations (2-ETS1-1, 2-ETS1-2, 2-ETS1-3) related to a single problem in order to understand the interrelated processes of engineering design. Students can use tools and materials to solve simple problems, use visual or physical representations to convey solutions, and compare different solutions to a problem, test them, and determine which is best. These component ideas do not always follow in order. At any stage, a problem-solver can redefine the problem or generate new solutions to replace an idea that is not working.

GRADE TWO

Structure and Properties of Matter

Students who demonstrate understanding can:

- 2-PS1-1** Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]
- 2-PS1-2** Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]
- 2-PS1-3** Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]
- 2-PS1-4** Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. [Clarification Statement: Examples of reversible changes could include materials such as water or butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. - Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1) Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. - Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. - Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3) Engaging in Argument from Evidence Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).	PS1.A: Structure and Properties of Matter - Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. (2-PS1-1) - Different properties are suited to different purposes. (2-PS1-2, 2-PS1-3) - A great variety of objects can be built up from a small set of pieces. (2-PS1-3) PS1.B: Chemical Reactions - Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2-PS1-4)	Patterns - Patterns in the natural and human designed world can be observed. (2-PS1-1) Cause and Effect - Events have causes that generate observable patterns. (2-PS1-4) - Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2) Energy and Matter - Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3) ----- - Connections to Engineering, Technology, and Applications of Science Influence of Engineering, Technology, and Science on Society and the Natural World - Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (2-PS1-2)

- Construct an argument with evidence to support a claim. (2-PS1-4) Connections to Nature of Science Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena - Scientists search for cause and effect relationships to explain natural events. (2-PS1-4)		
Connections to other DCIs in second grade: N/A		
Connections to other DCIs across grade levels: 4.ESS2.A (2-PS1-3); 5.PS1.A (2-PS1-1, 2-PS1-2, 2-PS1-3); 5.PS1.B (2-PS1-4); 5.LS2.A (2-PS1-3)		
<i>Connections to the Arkansas English Language Arts Standards –</i> 2.RC.1.RF Ask questions about key details in a text. (2-PS1-4) 2.RC.2.RF Answer questions about key details in a text. (2-PS1-4) 2.RC.13.RI Explain how an author uses reasons/evidence to support main points in a text. (2-PS1-2, 2-PS1-4) 2.W.1.S Write an opinion piece about a topic or text with details to support the opinion. (2-PS1-4) 2.W.9.P Participate in shared research projects to gather information from experiences and/or provided sources to produce writing. (2-PS1-1, 2-PS1-2, 2-PS1-3) 2.W.2.S Write an informative or explanatory piece about a topic, using facts from a source. (2-PS1-1, 2-PS1-2, 2-PS1-3) <i>Connections to the Arkansas Mathematics Standards –</i> AR.M.2 Applying reasoning about quantities and relationships. (2-PS1-2) AR.M.4 Select and use relationships and tools. (2-PS1-1, 2-PS1-2) AR.M.5 Identify relationships using structure and patterns. (2-PS1-2) 2.DA.1 Use bar graphs, picture graphs, and line plots to organize and represent data, interpreting data with up to four categories. (2-PS1-1, 2-PS1-2) 2.DA.2 Ask and answer simple put together, take apart, and compare problems, using information presented in the bar graphs, picture graphs, and line plots. (2-PS1-1, 2-PS1-2)		

GRADE TWO

Interdependent Relationships in Ecosystems		
Students who demonstrate understanding can:		
2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow. [Assessment Boundary: Assessment is limited to testing one variable at a time.]		
2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*		
2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in a variety of habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]		
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :		
Science and Engineering Practices Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. - Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2) Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. - Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-LS2-1) - Make observations (firsthand or from media) to collect data that can be used to make comparisons. (2-LS4-1) Connections to Nature of Science Scientific Knowledge is Based on Empirical Evidence - Scientists look for patterns and order when making observations about the world. (2-LS4-1)	Disciplinary Core Ideas LS2.A: Interdependent Relationships in Ecosystems - Plants depend on water and light to grow. (2-LS2-1) - Plants depend on animals for pollination or to move their seeds around. (2-LS2-2) LS4.D: Biodiversity and Humans - There are many different kinds of living things in any area, and they exist in different places on land and in water. (2-LS4-1) ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. (2-LS2-2)	Crosscutting Concepts Cause and Effect - Events have causes that generate observable patterns. (2-LS2-1) Structure and Function - The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)
Connections to other DCIs in second grade: N/A		
Connections to other DCIs across grade levels: K.LS1.C (2-LS2-1); K-ESS3.A (2-LS2-1); K-2.ETS1.A (2-LS2-2); 3.LS4.C (2-LS4-1); 3.LS4.D (2-LS4-1); 5.LS1.C (2-LS2-1); 5.LS2.A (2-LS2-2, 2-LS4-1)		

Connections to the Arkansas English Language Arts Standards –

- 2.W.9.P** Participate in shared research projects to gather information from experiences and/or provided sources to produce writing. (2-LS2-1, 2-LS4-1)
- 2.W.2.S** Write an informative or explanatory piece about a topic, using facts from a source. (2-LS2-1, 2-LS4-1)
- 2.CC.3.P** Use relevant, descriptive details to orally share a story or experience that includes appropriate facts. (2-LS2-2)
- 2.CC.4.P** Use visual displays to clarify ideas, thoughts, and feelings. (2-LS2-2)

Connections to the Arkansas Mathematics Standards –

- AR.M.2** Applying reasoning about quantities and relationships. (2-LS2-1, 2-LS4-1)
- AR.M.4** Select and use relationships and tools. (2-LS2-1, 2-LS2-2, 2-LS4-1)
- AR.M.5** Identify relationships using structure and patterns. (2-LS2-1)
- 2.DA.1** Use bar graphs, picture graphs, and line plots to organize and represent data, interpreting data with up to four categories. (2-LS2-2, 2-LS4-1)
- 2.DA.2** Ask and answer simple put together, take apart, and compare problems, using information presented in the bar graphs, picture graphs, and line plots. (2-LS2-2, 2-LS4-1)

GRADE TWO

Earth's Systems: Processes that Shape the Earth		
Students who demonstrate understanding can:		
2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]	
2-ESS2-1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.* [Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]	
2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area. [Assessment Boundary: Assessment does not include quantitative scaling in models.]	
2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.	
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :		
Science and Engineering Practices Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. - Develop a model to represent patterns in the natural world. (2-ESS2-2) Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. - Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1) - Compare multiple solutions to a problem. (2-ESS2-1) 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)	Disciplinary Core Ideas ESS1.C: The History of Planet Earth - Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) ESS2.A: Earth Materials and Systems - Wind and water can change the shape of the land. (2-ESS2-1) ESS2.B: Plate Tectonics and Large-Scale System Interactions - Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2) ESS2.C: The Roles of Water in Earth's Surface Processes - Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3) ETS1.C: Optimizing the Design Solution - Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (2-ESS2-1)	Crosscutting Concepts Patterns - Patterns in the natural world can be observed. (2-ESS2-2, 2-ESS2-3) Stability and Change - Things may change slowly or rapidly. (2-ESS1-1, 2-ESS2-1) - Connections to Engineering, Technology, and Applications of Science ----- Influence of Engineering, Technology, and Science on Society and the Natural World - Developing and using technology has impacts on the natural world. (2-ESS2-1) - Connections to Nature of Science ----- Science Addresses Questions About the Natural and Material World - Scientists study the natural and material world. (2-ESS2-1)
Connections to other DCIs in second grade: 2.PS1.A (2-ESS2-3)		
Connections to other DCIs across grade levels: K-2.ETS1.A (2-ESS2-1); 3.LS2.C (2-ESS1-1); 4.ESS1.C (2-ESS1-1); 4.ESS2.A (2-ESS1-1, 2-ESS2-1); 4.ESS2.B (2-ESS2-2); 3-5.ETS1.A (2-ESS2-1); 3-5.ETS1.B (2-ESS2-1); 3-5.ETS1.C (2-ESS2-1); 5.ESS2.A (2-ESS2-1); 5.ESS2.C (2-ESS2-2, 2-ESS2-3)		

Connections to the Arkansas English Language Arts Standards –

- 2.RC.1.RF** Ask questions about key details in a text. (2-ESS1-1)
- 2.RC.2.RF** Answer questions about key details in a text. (2-ESS1-1)
- 2.RC.14.RI** Compare and contrast two texts on the same topic.(2-ESS2-1)
- 2.W.9.P** Participate in shared research projects to gather information from experiences and/or provided sources to produce writing. (2-ESS1-1)
- 2.W.2.S** Write an informative or explanatory piece about a topic, using facts from a source. (2-ESS1-1, 2-ESS2-3)
- 2.CC.2.OL** Ask and answer questions about what a speaker says to gather additional information and clarify understanding. (2-ESS1-1)
- 2.CC.3.P** Use relevant, descriptive details to orally share a story or experience that includes appropriate facts. (2-ESS2-2)
- 2.CC.4.P** Use visual displays to clarify ideas, thoughts, and feelings. (2-ESS2-2)

Connections to the Arkansas Mathematics Standards –

- AR.M.2** Applying reasoning about quantities and relationships. (2-ESS2-1, 2-ESS2-1, 2-ESS2-2)
- AR.M.4** Select and use relationships and tools. (2-ESS1-1, 2-ESS2-1, 2-ESS2-2)
- AR.M.5** Identify relationships using structure and patterns. (2-ESS2-1)
- 2.GM.6** Solve real-world problems involving lengths of the same units, using addition and subtraction within 100. (2-ESS2-1)
- 2.NPV.1** Count within 1,000 forwards and backwards by ones, tens, and hundreds from any given number. (2-ESS1-1)
- 2.NPV.2** Identify the value of hundreds, tens, and ones place in a three-digit number. (2-ESS1-1)
- 2.NPV.3** Read, write, and represent whole numbers up to 1,000 using concrete models or drawings, number names, and a variety of expanded forms. (2-ESS2-2)
- 2.NPV.5** Compare two three-digit numbers using symbols (<, =, >) based on the value of hundreds, tens, and ones in the given numbers. (2-ESS1-1)

GRADE TWO

Engineering, Technology, and Applications of Science		
Students who demonstrate understanding can:		
2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.		
2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.		
2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.		
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :		
Science and Engineering Practices 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. (2-ETS1-1) - Define a simple problem that can be solved through the development of a new or improved object or tool. (2-ETS1-1) Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. - Develop a simple model based on evidence to represent a proposed object or tool. (2-ETS1-2) Analyzing and Interpreting Data Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. - Analyze data from tests of an object or tool to determine if it works as intended. (2-ETS1-3)	Disciplinary Core Ideas ETS1.A: Defining and Delimiting Engineering Problems - A situation that people want to change or create can be approached as a problem to be solved through engineering. (2-ETS1-1) - Asking questions, making observations, and gathering information are helpful in thinking about problems. (2-ETS1-1) - Before beginning to design a solution, it is important to clearly understand the problem. (2-ETS1-1) ETS1.B: Developing Possible Solutions - Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (2-ETS1-2) ETS1.C: Optimizing the Design Solution - Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (2-ETS1-3)	Crosscutting Concepts Structure and Function The shape and stability of structures of natural and designed objects are related to their function(s). (2-ETS1-2)
<i>Connections to K-2-ETS1.A: Defining and Delimiting Engineering Problems include: Kindergarten: (K-PS2-2, K-ESS3-2)</i> <i>Connections to K-2-ETS1.B: Developing Possible Solutions to Problems include: Kindergarten: (K-ESS3-3);</i> First Grade: (1-PS4-4); Second Grade: (2-LS2-2) <i>Connections to K-2-ETS1.C: Optimizing the Design Solution include: Second Grade: (2-ESS2-1)</i>		
<i>Connections to other DCIs across grade levels: 3-5.ETS1.A (2-ETS1-1, 2-ETS1-2, 2-ETS1-3); 3-5.ETS1.B (2-ETS1-2, 2-ETS1-3); 3-5.ETS1.C (2-ETS1-1, 2-ETS1-2, 2-ETS1-3)</i>		

Connections to the Arkansas English Language Arts Standards –

- 2.RC.1.RF** Ask questions about key details in a text. (2-ETS1-1)
- 2.RC.2.RF** Answer questions about key details in a text. (2-ETS1-1)
- 2.W.2.S** Write an informative or explanatory piece about a topic, using facts from a source. (2-ETS1-1 , 2-ETS1-3)
- 2.CC.3.P** Use relevant, descriptive details to orally share a story or experience that includes appropriate facts. (2-ETS1-2)
- 2.CC.4.P** Use visual displays to clarify ideas, thoughts, and feelings. (2-ETS1-2)

Connections to the Arkansas Mathematics Standards –

- AR.M.2** Applying reasoning about quantities and relationships. (2-ETS1-1, 2-ETS1-3)
- AR.M.4** Select and use relationships and tools. (2-ETS1-1, 2-ETS1-3)
- AR.M.5** Identify relationships using structure and patterns. (2-ETS1-1, 2-ETS1-3)
- 2.DA.1** Use bar graphs, picture graphs, and line plots to organize and represent data, interpreting data with up to four categories. (2-ETS1-1, 2-ETS1-3)
- 2.DA.2** Ask and answer simple put together, take apart, and compare problems, using information presented in the bar graphs, picture graphs, and line plots. (2-ETS1-1, 2-ETS1-3)

Contributors

The following educators contributed to the development of this document:

Becky Adams – Hamburg School District	Chris Lynch – Black River Technical College
W. Chance Bankhead – eSTEM Public Charter	Tammy McCloy – El Dorado School District
Leslie Brodie – Fort Smith School District	Laura Mewborn – Pulaski County Special School District
Stephen Brodie – UA Fort Smith STEM Center	Melissa Miller – Farmington School District
Cindy Cardwell – Bentonville School District	Reggie Nalls – Dollarway School District
Pam Carpenter – Bald Knob School District	Yolanda Prim - Dollarway School District
Debbie Daily – University of Central Arkansas	Kathy Prophet – Springdale School District
Rosa Dumond – Arkadelphia School District	Virginia Rhame – Northwest Arkansas Education Cooperative
Tami Eggensperger – Cabot School District	Brian Schuller – DeQueen Mena Education Cooperative
Alana Eifert – Malvern School District	Carolyn Smith – El Dorado School District
Linda Flynn – Farmington School District	Mary Smith – Nettleton School District
Jenny Gammill – Fayetteville School District	Melinda Smith – Jonesboro School District
A. Wade Geery – Norfolk School District	Pam Vaughan – Camden School District
Kyla Gentry – Searcy School District	Deborah Walker – Magnolia School District
Josh Jenkins – Springdale School District	Greg Wertenberger – Henderson University STEM Center
Marilyn Johnson – Little Rock School District	Rebecca Wilbern – Fayetteville School District
Christina Johnson – North Little Rock School District	Andrew Williams – University of Arkansas at Monticello
Debbie Jones – Sheridan School District	Gene Williams – Little Rock School District
Tifanie King – West Memphis School District	Shawna Williams – Farmington School District
Sandra Leiterman – Little Rock School District	Cathy Wissehr – University of Arkansas at Fayetteville
Steven Long – Rogers School District	