

**Correlation of**  
***Seeds of Science/Roots of Reading***<sup>®</sup>  
**Integrated Science and Literacy Units**

**with the Arkansas**  
**Science Standards for Grade 4**

Created November 2011



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Arkansas Science Standards – 4th Grade	2 <sup>nd</sup> - 3 <sup>rd</sup> Grade				3 <sup>rd</sup> - 4 <sup>th</sup> Grade				4 <sup>th</sup> - 5 <sup>th</sup> Grade			
	Soil Habitats	Shoreline Science	Designing Mixtures	Gravity & Magnetism	Light Energy	Weather & Water	Variation and Adaptation	Digestion & Body Systems	Planets & Moons	Aquatic Ecosystems	Models of Matter	Chemical Changes
<b>Strand 1: Nature of Science</b>												
<b>Standard 1: Characteristics and Processes of Science – Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology.</b>												
<b>Inquiry and Process Skills</b>												
NS.1.4.1 Communicate observations orally, in writing, and in graphic organizers: <ul style="list-style-type: none"> <li>• T-charts</li> <li>• pictographs</li> <li>• Venn diagrams</li> <li>• bar graphs</li> <li>• frequency tables</li> <li>• line graphs</li> </ul>	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
NS.1.4.2 Refine questions that guide scientific inquiry	● ● ●	● ●	● ●	● ●	● ●	● ●	●	● ●	● ●	● ● ●	● ●	● ● ●
NS.1.4.3 Conduct <i>scientific investigations</i> individually and in teams: <ul style="list-style-type: none"> <li>• <i>lab activities</i></li> <li>• <i>field studies</i></li> </ul>	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
NS.1.4.5 Communicate the designs, procedures, and results of <i>scientific investigations</i> (e.g., age-appropriate graphs, charts,	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●

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and writings)												
NS.1.4.6 Estimate and measure length, <i>mass</i> , <i>temperature</i> , capacity/volume, and elapsed time using International System of Units (SI)	●			●	●	●				●	●	
NS.1.4.7 Collect and interpret measurable <i>empirical evidence</i> in teams and as individuals	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ●	● ●	● ● ●	● ● ●	● ● ●	● ● ●
NS.1.4.8 Develop a <i>hypothesis</i> based on prior knowledge and observations	● ●	● ●	● ●	● ●	● ●	● ●	●		● ● ●	●	● ● ●	
NS.1.4.9 Identify <i>variables</i> that affect investigations			● ●		● ●	● ●			● ● ●	● ●	● ● ●	
NS.1.4.10 Identify patterns and trends in data	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ●	● ●	● ● ●	● ● ●	● ● ●	● ● ●
NS.1.4.11 Generate conclusions based on evidence	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
NS.1.4.12 Evaluate the quality and feasibility of an idea or project	● ● ●	● ● ●	● ●	● ● ●	● ● ●	● ● ●		● ●	●	● ● ●	● ● ●	
<b>Scientific Equipment and Technology</b>												

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NS.1.4.13 Use simple equipment, age appropriate tools, technology, and mathematics in <i>scientific investigations</i> (e.g., balances, hand lenses, microscopes, rulers, <i>thermometers</i> , calculators, computers)	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
NS.1.4.14 Apply lab safety rules as they relate to specific science <i>lab activities</i> (see Arkansas Lab Safety Guide)	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
<b>Strand 2: Life Science</b>												
<b>Standard 2: Living Systems: Characteristics, Structure, and Function</b>												
<b>Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology.</b>												
<b>Characteristics</b>												
LS.2.4.1 Classify <i>vertebrates</i> into major subgroups: <ul style="list-style-type: none"> <li>● mammals</li> <li>● birds</li> <li>● fish</li> <li>● amphibians</li> <li>● reptiles</li> </ul>												
LS.2.4.2 Classify some <i>invertebrates</i> according to their structure: <ul style="list-style-type: none"> <li>● mollusks</li> <li>● segmented worms</li> </ul>												

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<ul style="list-style-type: none"> <li>arthropods</li> </ul>												
<b>Structure and Function</b>												
LS.2.4.3 Identify major parts and functions of the following systems: <ul style="list-style-type: none"> <li>digestive</li> <li>circulatory</li> <li>nervous</li> </ul>							• •					
<b>Standard 3: Life Cycles, Reproduction, and Heredity</b> Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology.												
None												
<b>Standard 4: Populations and Ecosystems</b> Students shall demonstrate and apply knowledge of populations and ecosystems using appropriate safety procedures, equipment, and technology.												
LS.4.4.1 Recognize <i>environmental adaptations</i> of plants and animals	• • •	• •				•	• • •				• • •	
LS.4.4.2 Illustrate the interdependence of organisms in an <i>ecosystem</i>	• •	• •				•					• • •	
<b>Strand 3 : Physical Science</b>												
<b>Standard 5: Matter: Properties and Changes</b> Students shall demonstrate and apply knowledge of <i>matter</i> , including properties and changes, using appropriate safety procedures, equipment, and technology.												
<b>Physical Properties</b>												

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PS.5.4.1 Demonstrate multiple ways to classify objects	●	● ● ●	●	● ●					● ● ●	● ● ●		
PS.5.4.2 Demonstrate <i>chemical changes in matter</i>												● ● ●
<b>States of Matter</b>												
PS.5.4.3 Compare and contrast gases to solids and liquids						● ● ●					● ● ●	
<b>Standard 6: Motion and Forces</b> Students shall demonstrate and apply knowledge of motion and forces using appropriate safety procedures, equipment, and technology.												
<b>Motion and Forces</b>												
PS.6.4.1 Investigate the relationship between force and direction												
PS.6.4.2 Investigate the relationship between <i>force</i> and <i>mass</i>												
<b>Standard 7: Energy and Transfer of Energy</b> Students shall demonstrate and apply knowledge of energy and transfer of energy using appropriate safety procedures, equipment, and technology.												
<b>Heat</b>												
PS.7.4.1 Interpret trends in <i>temperature</i> over time using the Celsius scale						● ● ●						
<b>Electricity</b>												

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PS.7.4.2 Classify electrical <i>conductors</i> and electrical <i>insulators</i>												
PS.7.4.3 Construct simple circuits from circuit diagrams												
<b>Strand 4: Earth and Space Science</b>												
<b>Standard 8: Earth Systems: Structure and Properties</b>												
<b>Students shall demonstrate and apply knowledge of Earth’s structure and properties using appropriate safety procedures, equipment and technology.</b>												
<b>Properties of the Earth</b>												
ESS.8.4.1 Locate natural divisions of Arkansas: <ul style="list-style-type: none"> <li>• Ozark Plateau</li> <li>• Ouachita Mountains</li> <li>• Crowley’s Ridge</li> <li>• Mississippi Alluvial Plain (Delta)</li> <li>• Coastal Plain</li> <li>• Arkansas River Valley</li> </ul>												
<b>Natural Resources</b>												
ESS.8.4.2 Analyze the impact of using <i>natural resources</i>	•	••				••				•		
ESS.8.4.3 Differentiate between renewable and non-renewable resources	•	••				••				•		

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ESS.8.4.4 Evaluate the impact of water pollution		● ● ●				● ●						
ESS.8.4.5 Evaluate the impact of Arkansas’ <i>natural resources</i> on the economy, including but not limited to <ul style="list-style-type: none"> <li>● farming</li> <li>● timber</li> <li>● tourism</li> <li>● hunting</li> <li>● fishing</li> </ul>												
ESS.8.4.6 Evaluate human use of Arkansas’ <i>natural resources</i> on the <i>environment</i> , including but not limited to <ul style="list-style-type: none"> <li>● mining</li> <li>● clear cutting</li> <li>● dredging</li> </ul>												
<b>Weather</b>												
ESS.8.4.7 Describe the processes of the <i>water cycle</i> : <ul style="list-style-type: none"> <li>● <i>precipitation</i></li> <li>● <i>evaporation</i></li> <li>● <i>condensation</i></li> </ul>						● ● ●						

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ESS.8.4.8 Organize weather data into tables or charts to identify trends and patterns						● ● ●						
ESS.8.4.9 Demonstrate safety procedures related to severe weather						●						
ESS.8.4.10 Describe weather-related natural disasters						●						
ESS.8.4.11 Construct and read instruments to collect weather data: <ul style="list-style-type: none"> <li>● <i>barometer</i></li> <li>● <i>weather vane</i></li> <li>● <i>anemometer</i></li> </ul>						● ● ●						
<b>Standard 9: Earth’s History: Changes in Earth and Sky</b> <b>Students shall demonstrate and apply knowledge of Earth’s history using appropriate safety procedures, equipment, and technology.</b>												
<b>Weather</b>												
ESS.9.4.1 Analyze changes to Earth’s surface: <ul style="list-style-type: none"> <li>● <i>erosion</i></li> <li>● <i>glaciation</i></li> <li>● <i>weathering</i></li> <li>● <i>earthquakes</i></li> <li>● <i>volcanic activity</i></li> </ul>		● ●				●						

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<p><b>Standard 10: Objects in the Universe</b>  <b>Students shall demonstrate and apply knowledge of objects in the universe using appropriate safety procedures, equipment, and technology.</b>                      None</p>												

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