

**Correlation of
Seeds of Science/Roots of Reading
2nd and 3rd Grade Integrated Science and Literacy Units:**

***Shoreline Science
Soil Habitats
Designing Mixtures
Gravity and Magnetism***

**with the State of Ohio
Science Standards and Benchmarks**



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	Shoreline Science	Soil Habitats	Designing Mixtures	Gravity & Magnetism
STANDARDS AND BENCHMARKS				
Earth and Space Sciences				
<i>By the end of the K-2 program:</i>				
A. Observe constant and changing patterns of objects in the day and night sky.				
B. Explain that living things cause changes on Earth.	•	•••		
C. Observe, describe and measure changes in the weather, both long term and short term.				
D. Describe what resources are and recognize some are limited but can be extended through recycling or decreased use.	•			
<i>By the end of the 3-5 program:</i>				
A. Explain the characteristics, cycles and patterns involving Earth and its place in the solar system.				
B. Summarize the processes that shape Earth's surface and describe evidence of those processes.	•••			
C. Describe Earth's resources including rocks, soil, water, air, animals and plants and the ways in which they can be conserved.	••	•••		
D. Analyze weather and changes that occur over a period of time.				
Life Sciences				
<i>By the end of the K-2 program:</i>				
A. Discover that there are living things, non-living things and pretend things, and describe the basic needs of living things (organisms).	••	••		
B. Explain how organisms function and interact with their physical environment.	•••	•••		
C. Describe similarities and differences that exist among individuals of the same kind of plants and animals.		•		

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	Shoreline Science	Soil Habitats	Designing Mixtures	Gravity & Magnetism
Life Sciences <i>continued</i>				
<i>By the end of the 3-5 program:</i>				
A. Differentiate between the life cycles of different plants and animals.		•		
B. Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.	• •	• •		
C. Compare changes in an organism's ecosystem/ habitat that affect its survival.	• • •	• • •		
Physical Sciences				
<i>By the end of the K-2 program:</i>				
A. Discover that many objects are made of parts that have different characteristics. Describe these characteristics and recognize ways an object may change.			• •	
B. Recognize that light, sound and objects move in different ways.				
C. Recognize sources of energy and their uses.				
<i>By the end of the 3-5 program:</i>				
A. Compare the characteristics of simple physical and chemical changes.				
B. Identify and describe the physical properties of matter in its various states				
C. Describe the forces that directly affect objects and their motion.				• • •
D. Summarize the way changes in temperature can be produced and thermal energy transferred.				
E. Trace how electrical energy flows through a simple electrical circuit and describe how the electrical energy can produce thermal energy, light, sound and magnetic forces.				
F. Describe the properties of light and sound energy.				

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	Shoreline Science	Soil Habitats	Designing Mixtures	Gravity & Magnetism
Science and Technology				
<i>By the end of the K-2 program:</i>				
A. Explain why people, when building or making something, need to determine what it will be made of, how it will affect other people and the environment.			• •	
B. Explain that to construct something requires planning, communication, problem solving and tools.			• • •	
<i>By the end of the 3-5 program:</i>				
A. Describe how technology affects human life.				
B. Describe and illustrate the design process.				
Scientific Inquiry				
<i>By the end of the K-2 program:</i>				
A. Ask a testable question.	•	• • •	•	•
B. Design and conduct a simple investigation to explore a question.		• • •		
C. Gather and communicate information from careful observations and simple investigation through a variety of methods.	• • •	• • •	• • •	• • •
<i>By the end of the 3-5 program:</i>				
A. Use appropriate instruments safely to observe, measure and collect data when conducting a scientific investigation.		• •	• •	• •
B. Organize and evaluate observations, measurements and other data to formulate inferences and conclusions.	• • •	• • •	• • •	• • •
C. Develop, design and safely conduct scientific investigations and communicate the results.	•	• • •	•	•

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	Shoreline Science	Soil Habitats	Designing Mixtures	Gravity & Magnetism
Scientific Ways of Knowing				
<i>By the end of the K-2 program:</i>				
A. Recognize that there are different ways to carry out scientific investigations. Realize that investigations can be repeated under the same conditions with similar results and may have different explanations.	•	•	•	•
B. Recognize the importance of respect for all living things.	•••	•••		
C. Recognize that diverse groups of people contribute to our understanding of the natural world.	•	•••	••	
<i>By the end of the 3-5 program:</i>				
A. Distinguish between fact and opinion and explain how ideas and conclusions change as new knowledge is gained.	•••	•••	•••	•••
B. Describe different types of investigations and use results and data from investigations to provide the evidence to support explanations and conclusions.	••	••	••	••
C. Explain the importance of keeping records of observations and investigations that are accurate and understandable.	•••	•••	•••	•••
D. Explain that men and women of diverse countries and cultures participate in careers in all fields of science.	•	•••	••	

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INDICATORS				
Earth and Space Sciences- 2nd grade				
<i>The Universe</i>				
1. Recognize that there are more stars in the sky than anyone can easily count.				
2. Observe and describe how the sun, moon and stars all appear to move slowly across the sky.				
3. Observe and describe how the moon appears a little different every day but looks nearly the same again about every four weeks.				
<i>Earth Systems</i>				
4. Observe and describe that some weather changes occur throughout the day and some changes occur in a repeating seasonal pattern.				
5. Describe weather by measurable quantities such as temperature and precipitation.				
Earth and Space Sciences- 3rd grade				
<i>Earth Systems</i>				
1. Compare distinct properties of rocks (e.g., color, layering and texture).		••		
2. Observe and investigate that rocks are often found in layers.				
3. Describe that smaller rocks come from the breakdown of larger rocks through the actions of plants and weather.	•••			
4. Observe and describe the composition of soil (e.g., small pieces of rock and decomposed pieces of plants and animals, and products of plants and animals).	••	•••		
5. Investigate the properties of soil (e.g., color, texture, capacity to retain water, ability to support plant growth).		•••		
6. Investigate that soils are often found in layers and can be different from place to place.		•••		

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Life Sciences- 2nd grade				
<i>Characteristics and Structure of Life</i>				
1. Explain that animals, including people, need air, water, food, living space and shelter; plants need air, water, nutrients (e.g., minerals), living space and light to survive.	• • •	• • •		
2. Identify that there are many distinct environments that support different kinds of organisms.	• •	• •		
3. Explain why organisms can survive only in environments that meet their needs (e.g., organisms that once lived on Earth have disappeared for different reasons such as natural forces or human-caused effects).	•	• •		
<i>Heredity</i>				
4. Compare similarities and differences among individuals of the same kind of plants and animals, including people.				
<i>Diversity and Interdependence of Life</i>				
5. Explain that food is a basic need of plants and animals (e.g., plants need sunlight to make food and to grow, animals eat plants and /or other animals for food, food chain) and is important because it is a source of energy (e.g., energy used to play, ride bicycles, read, etc.).	• •	• •		
6. Investigate the different structures of plants and animals that help them live in different environments (e.g., lungs, gills, leaves and roots).	• • •	• • •		
7. Compare the habitats of many different kinds of Ohio plants and animals and some of the ways animals depend on plants and each other.				
8. Compare the activities of Ohio's common animals (e.g., squirrels, chipmunks, deer, butterflies, bees, ants, bats and frogs) during the different seasons by describing changes in their behaviors and body covering.				
9. Compare Ohio plants during the different seasons by describing changes in their appearance.				

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Life Sciences- 3rd grade				
<i>Heredity</i>				
1. Compare the life cycles of different animals including birth to adulthood, reproduction and death (e.g., egg-tadpole-frog, egg-caterpillar-chrysalis-butterfly).				
<i>Diversity and Interdependence of Life</i>				
2. Relate animal structures to their specific survival functions (e.g., obtaining food, escaping or hiding from enemies).	• • •	• • •		
3. Classify animals according to their characteristics (e.g., body coverings and body structure).				
4. Use examples to explain that extinct organisms may resemble organisms that are alive today.				
5. Observe and explore how fossils provide evidence about animals that lived long ago and the nature of the environment at that time.				
6. Describe how changes in an organism's habitat are sometimes beneficial and sometimes harmful.	• • •	•		
Physical Sciences- 2nd grade				
<i>Forces and Motion</i>				
1. Explore how things make sound (e.g., rubber bands, tuning fork and strings).				
2. Explore and describe sounds (e.g., high, low, soft and loud) produced by vibrating objects.				
3. Explore with flashlights and shadows that light travels in a straight line until it strikes an object.				
Physical Sciences- 3rd grade				
<i>Forces and Motion</i>				
1. Describe an objects position by locating it relative to another object or the background.				
2. Describe an objects motion by tracing and measuring its position over time.				
3. Identify contact/ noncontact forces that affect motion of an object (e.g., gravity, magnetism and collision).				• • •
4. Predict the changes when an object experiences a force (e.g., a push or pull, weight and friction).				• • •

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Science and Technology- 2nd grade				
<i>Understanding Technology</i>				
1. Explain that developing and using technology involves benefits and risks.				
2. Investigate why people make new products or invent new ways to meet their individual wants and needs.			• • •	
3. Predict how building or trying something new might affect other people and the environment.				
<i>Abilities To Do Technological Design</i>				
4. Communicate orally, pictorially, or in written form the design process used to make something.			• • •	
Science and Technology- 3rd grade				
<i>Understanding Technology</i>				
1. Describe how technology can extend human abilities (e.g., to move things and to extend senses).				•
2. Describe ways that using technology can have helpful and /or harmful results.	• •			
3. Investigate ways that the results of technology may affect the individual, family and community.	• •			
<i>Abilities To Do Technological Design</i>				
4. Use a simple design process to solve a problem (e.g., identify a problem, identify possible solutions and design a solution).			• • •	
5. Describe possible solutions to a design problem (e.g., how to hold down paper in the wind).			• • •	
Scientific Inquiry- 2nd grade				
<i>Doing Scientific Inquiry</i>				
1. Ask "how can I/we" questions.	• • •	• • •	• • •	• • •
2. Ask "how do you know" questions (not "why" questions) in appropriate situations and attempt to give reasonable answers when others ask questions.	• • •	• • •	• • •	• • •
3. Explore and pursue student-generated "how" questions.	• •	• •	• •	• •
4. Use appropriate safety procedures when completing scientific investigations.	• •	• •	• •	• •

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Scientific Inquiry- 2nd grade				
<i>Doing Scientific Inquiry</i> continued				
5. Use evidence to develop explanations of scientific investigations. (What do you think? How do you know?)	• • •	• • •	• • •	• • •
6. Recognize that explanations are generated in response to observations, events and phenomena.	• • •	• • •	• • •	• • •
7. Use appropriate tools and simple equipment/instruments to safely gather scientific data (e.g., magnifiers, non-breakable thermometers, timers, rulers, balances and calculators and other appropriate tools).		•	• •	• •
8. Measure properties of objects using tools such as rulers, balances and thermometers.		•	• •	• •
9. Use whole numbers to order, count, identify, measure and describe things and experiences.		• •	• •	• •
Scientific Inquiry- 3rd grade				
<i>Doing Scientific Inquiry</i>				
1. Select the appropriate tools and use relevant safety procedures to measure and record length and weight in metric and English units.		•		• •
2. Discuss observations and measurements made by other people.	• • •	• • •	• • •	• • •
3. Read and interpret simple tables and graphs produced by self/others.	• •	• •	• •	• • •
4. Identify and apply science safety procedures.	• •	• •	• •	• •
5. Record and organize observations (e.g., journals, charts and tables).	• • •	• • •	• • •	• • •
6. Communicate scientific findings to others through a variety of methods (e.g., pictures, written, oral and recorded observations).	• • •	• • •	• • •	• • •

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Scientific Ways of Knowing- 2nd grade				
<i>Nature of Science</i>				
1. Describe that scientific investigations generally work the same way under the same conditions.		•	•	•
2. Explain why scientists review and ask questions about the results of other scientists' work.	•••	•••	•••	•••
<i>Ethical Practices</i>				
3. Describe ways in which using the solution to a problem might affect other people and the environment.	•••			
<i>Science and Society</i>				
4. Demonstrate that in science it is helpful to work with a team and share findings with others.	•••	•••	•••	•••
Scientific Ways of Knowing- 3rd grade				
<i>Nature of Science</i>				
1. Describe different kinds of investigations that scientists use depending on the questions they are trying to answer.	••	••	••	••
<i>Ethical Practices</i>				
2. Keep records of investigations and observations and do not change the records that are different from someone else's work.	•••	•••	•••	•••
<i>Science and Society</i>				
3. Explore through stories how men and women have contributed to the development of science.	•	••	•	
4. Identify various careers in science.	••	••	••	
5. Discuss how both men and women find science rewarding as a career and in their everyday lives.	••	••	••	

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