SCIENCE (Grade K) | Curriculum Map

K-2 GRADE BAND THEME: <u>Observations of the Environment</u> This theme focuses on helping students develop skills for systematic discover to understand the science of the natural world around them in greater depth by using scientific inquiry. **Kindergarten overview:** Living and nonliving things have specific physical properties that can be used to sort and classify. The physical properties of air and water are presented as they apply to weather	**SCIENCE INQUIRY & APPLICATIONS: During the years of PreK-4, all students must develop the ability to** → Observe and ask questions about the natural environment. → Plan and conduct simple investigations. → Employ simple equipment and tools to gather data and extend the senses. → Use appropriate mathematics with data to construct reasonable explanations. → Communicate about observations, investigations, and explanations. → Review and ask questions about the observations and explanations of others.

EARTH & SPACE SCIENCE (ESS)			
Daily and Seasonal Changes. This topic focuses on observing, exploring, describing and comparing weather changes, patterns in the sky, and changing seasons.			
Ohio Science Standards (2018)	**Essential Vocabulary**	**Student Learning Targets**	**Suggested Investigations**
ESS K.1. <u>Weather changes</u> are long term and short term. ▪ Weather changes occur throughout the day and from day to day. ▪ Air is a nonliving substance that surrounds Earth, and wind is air that is moving. ▪ Wind, temperature, and precipitation can be used to document short-term weather changes that are observable. ▪ Yearly weather changes (seasons) are observable patterns in the daily weather changes. **Note:** *The focus is on observing the weather patterns of seasons. The reason for changing*	air changes (*long term, short term*) nonliving observe patterns seasons (*autumn/fall, winter, spring, summer*) weather (*rain, sun, clouds, partly cloudy, wind, temperature*)	▪ **Observe** and **record** changes in the weather, season to season and throughout the day. [L2] ▪ **Describe** wind. [L2] ▪ **Identify** patterns in weather changes. [L3]	▪ Take seasonal walks; observe items typically found during the different seasons (e.g., acorns, leaves, snow etc.). ▪ Weather forecaster job or station: Fill out a weather forecast form for the day using tools provided (flag, thermometer). Write daily weather charts or graphs. ▪ Make weather measurements on a regular basis throughout the school year and then compare, explain and discuss each week and each month. ▪ Use age-appropriate tools to observe, measure and document wind, temperature and precipitation, e.g., identify whether the temperature is above or below a given

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seasons is not appropriate for this grade level; this is found in grade 7.			point (warmer or colder) or mark snow depth on a dowel rod.
ESS K.2. The <u>moon, sun and stars</u> can be observed at different times of the day or night. ▪ The moon, sun and stars are in different positions at different times of the day or night. ▪ Sometimes the moon is visible during the night; sometimes the moon is visible during the day; and at other times, the moon is not visible at all. ▪ The observable shape of the moon changes in size very slowly throughout the month. ▪ The sun is visible only during the day. ▪ The sun's position in the sky appears to change in a single day and from season to season. ▪ Stars are visible at night; some are visible in the evening or morning; and some are brighter than others.	moon sun stars evening morning day night visible shape size change bright appearance	▪ **Observe** the locations of the sun, moon and stars over time. [L2] ▪ **Show** how the sun or moon changes over time. [L2] ▪ **Predict** whether the sun or moon will be visible. [L3]	▪ Visit the Ohio State or COSI Planetarium. ▪ Explore with Google Sky. Complete virtual observations of the sun and stars, then compare data month to month to observe changes. ▪ Create a sundial. Measure and record shadows throughout the day and connect to the sun's movement. ▪ Observe the moon. Make a calendar of how the moon changes.

Interactive Science	Suggested Cross-Curricular Connections for Earth and Space Science: Daily and Seasonal Changes			
	English Language Arts	**Mathematics**	**Social Studies**	**Other**
Ch. 4: Earth and Sky Lesson 1: What can you see in the day sky? Lesson 2: How does the sun seem to move? Lesson 3: What can you see in the night sky? Lesson 4: What are some kinds of weather? Lesson 5: What are the seasons?	Reading Literary Text (RL) K.RL.1 Ask and answer questions K.RL.2 Retell familiar stories with key details K.RL.3 Identify characters, settings, and major events. K.RL.4 Ask and answer questions about unknown words. K.RL.5 Recognize common types of texts. K.RL.6 Name author and illustrator and define role of each. K.RL.7 Describe relationship between illustrations and story. K.RL.9 Compare & contrast adventures and experiences of characters in familiar stories. Writing Narrative (W) W.K.3 Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened. W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).	Mathematical Practices (MP) K.MP.8: Look for and express regularity in repeated reasoning Measurement and Data (MD) K.MD.2: Directly compare two objects with a measurable attribute Geometry (G) K.G.1: Describe objects in the environment using names of shapes; describe relative positions of these objects	History (H) K.H.1 Time can measured. K.H.2: Personal history can be shared through stories and pictures K.H.3: Heritage is reflected through diverse cultures; show through arts, customs, traditions, celebrations, and language	Careers: solar engineer, meteorologist, astronomer Technology

PHYSICAL SCIENCE (PS)			
Properties of Everyday Objects and Materials. This topic focuses on the production of sound and on observing, exploring, describing and comparing the properties of objects and materials with which the student is familiar.			
OH Science Standards (2018)	**Essential Vocabulary**	**Student Learning Targets**	**Suggested Investigations**
PS K.1. Objects and materials can be sorted and described by their <u>properties</u>. ▪ Objects can be sorted and described by the properties of the materials from which they are made. ▪ Some of the properties can include color, size and texture.	cloth color glass material metal object paper property size texture (*smooth, bumpy, rough)* wood	▪ **Recognize** the materials an object is made of. [L1] ▪ **Describe** objects by their properties. [L2] ▪ **Classify** objects by properties and **describe** how I've sorted. [L3] ▪ **Compare** and **contrast** objects based on their properties. [L3]	▪ Identify five senses and use to explore objects using measurement tools and magnifying glasses. Complete observational drawings and labeling of items. ▪ Use observable (touch, see, hear, smell) information to categorize items by creating a system of organization (e.g., objects can be identified by material, color, shape, texture). ▪ Create a visual representation of a categorization of various objects and present findings orally.
PS K.2. Some objects and materials can be made to <u>vibrate to produce sound</u>. ▪ Sound is produced by touching, blowing or tapping objects. ▪ The sounds that are produced vary depending on the properties of objects. ▪ Sound is produced when objects vibrate.	blow sound (*low, high, fast, slow, loud, soft*) tap touch vibrate	▪ **Explore** and **identify** ways to make different sounds. [L3 & 4] ▪ **Predict** what kind of sound will be made by different materials or vibrations. [L3] ▪ **Describe** how sound is made. [L2]	▪ Field trip: school concert; symphony ▪ Compare sounds made from drums with different properties. ▪ Explore objects and discover ways to use them to make many various sounds. ▪ Compare the notes made from a rubber band stretched at various lengths. (represent the sounds with pictures). ▪ Create instruments. Change properties of homemade instruments (e.g. drum) to cause different pitches. ▪ Explore vibrations by putting rice on the head of a drum.

Interactive Science	Suggested Cross-Curricular Connections for Physical Science: Properties of Everyday Objects and Materials			
	English Language Arts	**Mathematics**	**Social Studies**	**Other**
Ch. 5: Objects Lesson 1: What are your five senses? Lesson 2: What are objects made of? Lesson 3: What can you tell about objects? Lesson 4: How can you sort objects? Lesson 5: How is sound made?	Reading Informational Text (RI) K.RI.1: Ask and answer questions about key details K.RI.2: Identify main topic and details K.RI.3: Describe connection between two individuals, events, ideas, or pieces of information K.RI.4: Ask and answer questions about unknown words K.RI.6: Name author of a text K.RI.7: Describe relationship between illustrations & text K.RI.9: Identify similarities and differences between two texts on same topic Writing (W) K.W.2: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts that name what is being written about and supply some information about the topic K.W.8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question	Mathematical Practices (MP) K.MP.2: Reason abstractly and quantitatively K.MP.7: Look for and make use of structure Measurement and Data (MD) K.MD.1: Identify and describe measurable attributes of a single object K.MD.3: Classify objects into given categories; count the numbers of objects in each category Geometry (G) K.G.2: Correctly name shapes regardless of orientation or size K.G.4: Describe and compare 2D or 3D shapes K.G.5: Model shapes in the world by building shapes from components	Economics (E) K.E.11: Individuals have wants and needs; make decisions to satisfy wants K.E.12: Goods are objects; services are actions; both can satisfy wants	Careers musician, scientist Technology sonar

LIFE SCIENCE (LS)			
Physical and Behavioral Traits of Living Things. This topic focuses on observing, exploring, describing and comparing living things in Ohio.			
OH Science Standards (2018)	**Essential Vocabulary**	**Student Learning Targets**	**Suggested Investigations**
LS K.1. <u>Living things</u> have specific characteristics and traits. ▪ Living things grow and reproduce. ▪ Living things are found worldwide.	animal characteristic living (*alive, grow*) nonliving plant reproduce trait	▪ **List** living things. [L1] ▪ **Describe** living things. [L2] ▪ **Compare** and **contrast** living things found in Ohio. [L3]	▪ Possible field trip: any Metro Park. Observe living and nonliving items in the environment. ▪ Compare land animals to water animals (e.g., worms to fish). ▪ Design and maintain an environment that will support living things (e.g., fish, worms, plants, potato bugs, lizards, etc.). ▪ Observe plants growing toward a light source. Explore what happens when the plant is rotated or placed in a location, e.g. on the floor, in a closet, on a desk, etc. ▪ Ask: *Which type of flower attracts more birds, butterflies, bees or moths?* Investigate by growing a flower garden and keeping accurate records of which types of animals visit each chosen type of flower.
LS K.2. Living things have <u>physical traits and behaviors</u>, which influence their survival. ▪ Living things are made up of a variety of structures. ▪ Some traits can be observable structures. ▪ Some of these structures and behaviors influence their survival.	behavior physical trait structure survival	▪ **Recognize** common structures of living things. [L1] ▪ **Identify** behaviors of living things. [L3] ▪ **Compare** how structures of living things help them survive. [L3] ▪ **Contrast** how behaviors of living things help them survive. [L3]	▪ Examine pictures and live examples of plants and animals. Identify structures and behaviors. Make note of their similarities and differences. Label diagrams. ▪ Plant seeds and watch them grow. ▪ Identify the functions of specific parts of plants and animals. Label diagrams. ▪ Possible field trips: local or Metro Park, Franklin Park Conservatory, Columbus Zoo

Interactive Science	Suggested Cross-Curricular Connections for Life Science: Daily and Seasonal Changes			
	English Language Arts	**Mathematics**	**Social Studies**	**Other**
Ch. 3: Living Things and Nonliving Things Lesson 1: What are living things? Lesson 2: What do living things need? Lesson 3: How are animals alike and different? Lesson 4: How are plants alike and different?	Reading Informational Text (RI) K.RI.1: Ask and answer questions about key details K.RI.2: Identify main topic and details K.RI.3: Describe connection between two individuals, events, ideas, or pieces of information K.RI.4: Ask and answer questions about unknown words K.RI.6: Name author and illustrator of a text; define their roles in presenting ideas or information K.RI.7: Describe relationship between illustrations and text K.RI.8: Identify reasons an author gives to support points K.RI.9: Identify similarities and differences between two texts on same topic Writing Opinion (W) K.W.1: Use a combination of drawing, dictating, and writing to compose opinion pieces that tell a reader the topic or the name of the book being written about and express an opinion or preference about the topic or book (e.g., My favorite book is ...)	Mathematical Practices (MP) K.MP.3: Construct viable arguments and critique the reasoning of others	Geography (G) K.G.5: Direction and distance terms, symbols, and landmarks can be used to talk about location of familiar places K.G.6: Models and maps represent real places K.G.7: Humans depend on and impact their physical environment to supply food, clothing, and shelter	Careers: cartographer, gardener, marine biologist, zoologist Technology

District Instructional Resources:

Interactive Science (2012) / Pearson – six-year adoption (2019-2020 to 2024-2025) that includes resources:

- Digital texts only (online student edition, videos, virtual labs, simulations, animations, vocabulary match, assessments, and leveled readers with ELL support)
- Inquiry (activity cards, materials equipment kit)
- Readers' theater, science songs
- STEM activity book

Standards Alignment:

Ohio Learning Standards – retrieved Feb. 11, 2019 from
http://education.ohio.gov/getattachment/Topics/Learning-in-Ohio/Science/Ohios-Learning-Standards-and-MC/SciFinalStandards121018.pdf.aspx?lang=en-US

Levels of Complexity / Performance Verbs:

Level I - Recall	Level 2 - Skill/Concept	Level 3 - Strategic Thinking	Level 4 - Extended Thinking
▪ Arrange ▪ Choose ▪ Define ▪ Draw ▪ Label ▪ List ▪ Name ▪ Recognize ▪ Tell	▪ Categorize ▪ Collect ▪ Describe ▪ Document ▪ Estimate ▪ Illustrate ▪ Measure ▪ Observe ▪ Organize ▪ Predict ▪ Record ▪ Represent ▪ Use	▪ Apply ▪ Classify ▪ Compare ▪ Communicate ▪ Contrast ▪ Demonstrate ▪ Determine ▪ Develop ▪ Explain ▪ Identify ▪ Investigate ▪ Plan ▪ Relate ▪ Support	▪ Analyze ▪ Assess ▪ Conduct ▪ Connect ▪ Create ▪ Design ▪ Evaluate ▪ Explore ▪ Infer