RETHINK EDUCATION
North Carolina Department of Public Instruction

An At-Home Guide for Families

Kindergarten Science in North Carolina Public Schools

Content Outline

At the end of the year, my child will be able to…

- describe what it means for an object to be in motion.
- show what an object may look like while in motion.
- explain that objects can move in different ways.
- demonstrate the different movement patterns (straight, zigzag, round and round, back and forth, fast, slow).
- understand that pushing an object moves it AWAY from me.
- show that the strength of the push impacts where the object goes.
- understand that pulling an object moves it TOWARDS me.
- show that the strength of a pull impacts where the object goes.
- demonstrate an understanding of physical properties.
- sort various objects using size, color, shape, and texture.
- use physical properties of different objects to identify how they are used in everyday life.
- understand that materials can be changed in order to make products we use everyday.
- understand that they can use their senses to track changes in the things around them.
- understand that change naturally occurs all around us.
- be able to recognize the different types of weather.
- identify the four seasons.
- understand that each season has different weather patterns.
- gain an understanding of how weather impacts their clothing choices.
- identify characteristics of living things.
- compare characteristics of living and nonliving things.
- compare the structures of various animals, including humans.
- compare the functions of each structure.
- observe and describe the physical characteristics that are the same and different among birds.
- explain how birds use their structure to function.
- compare how animals move.
- identify the structures animals use to move in different ways.
- observe and compare how different organisms grow and change over time.
- explain the basic needs organisms have for survival.

Curious what the specific standards are for Kindergarten Science in North Carolina?

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Check out the **North Carolina Standard Course of Study** to learn more. Looking for additional explanations about what students should be able to do at the end of this course? Check out **NC DPI's unpacked contents document** aligned to the course standards.

Key Vocabulary

Visual	Term	Definition
	motion	the act of changing place or position
	position	the location of an object
	straight	no bends or curves
	zig zag	moving side to side
	push	moving an object or thing away from me
	strength	being strong
	pull	moving an object or thing towards me
	physical properties	characteristic of an object that you can measure or observe with at least one of your five senses
	size	How big or small something is

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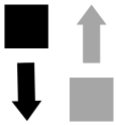
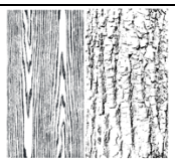
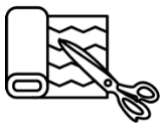
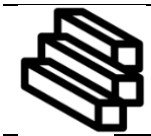
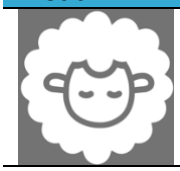
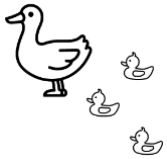
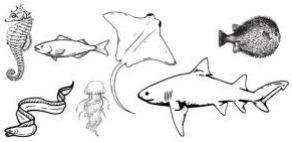
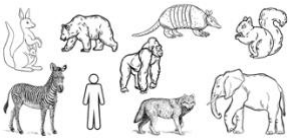
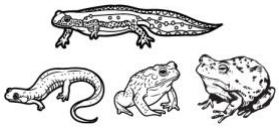
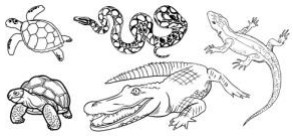
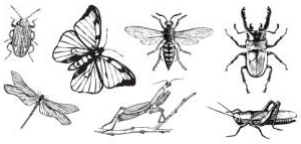
Visual	Term	Definition
	color	Examples are blue, green, red and orange
	shape	The form of an object
	sort	separating objects into groups according to their similarities
	weight	how heavy something is
	texture	how something feels when it is touched
	flexibility	how bendable something is
	clay	A natural material made up of tiny particles of rock that when wet is soft and can be molded. When dried, clay is very hard.
	wood	hard material found under the bark of trees and bushes.
	cloth	material made from combining substances like cotton or wool together to make one piece.
	paper	thin material made mostly from trees, used for writing, printing, wrapping and other purposes
	metal	material found in underground rocks. Metals have many properties, such as strength, toughness, and stiffness.
	logger	a person who cuts down trees for wood

Visual	Term	Definition
	wool	The soft, curly hair of a sheep. Wool is shaved from the sheep and used to make clothing and other types of cloth.
	touch	to come into contact with
	taste	sensations on the tongue
	smell	inhale the scent through the nose
	hear	sound coming through the ear
	sight	viewing through the eye
	change	to make different
	snow	frozen water falling from the sky
	temperature	how hot or cold it is outside
	wind	air moving across the earth
	rain	water falling from the sky
	spring	Time of year where the temperature begins to get warmer and the days begin to get longer.
	summer	Time of year when the temperature is the warmest and the days are the longest.
	autumn	Time of year when the temperature begins to get colder. Sometimes called Fall.

Visual	Term	Definition
	winter	Time of year with the coldest temperatures. Snow and ice are common. Days are short.
	raincoat	a waterproof coat
	galoshes	waterproof boots also called rain boots
	umbrella	A tool used to protect against the rain and other types of weather.
	living organism	things that are alive or have been alive
	non-living	things that are not alive and have never been alive
	reproduce	to make more of itself
	structure	The parts that work together and make up something.
	vertebrate	An animal that has a spine.
	invertebrate	An animal that does not have a spine.

Visual	Term	Definition
	birds	group of vertebrate animals with feathers
	fish	group of vertebrate animals that live in water
	mammal	group of vertebrate animals that can make milk for their young and have hair/fur
	amphibian	group of vertebrate animals that are small and need water to survive
	reptile	group of vertebrates animals that have dry skin and scales
	insect	group of invertebrate animals that have 6 legs, a head, thorax and abdomen
	beak	the hard and pointed part of a bird's mouth
	feather	the light covering on a bird

Visual	Term	Definition
	talon	claws of a bird used to catch food
	prey	an animal that is caught and killed for another animal to eat
	insulate	to keep warm
	hooves	hard part of the foot on some animals that allow them to walk or run and keep their balance
	webbed feet	feet that have skin between the toes that helps aquatic animals swim and move in water
	fin	flat part on an aquatic animal used to swim and navigate
	flipper	large flat body part on an aquatic animal used to swim
	paw	flat part on the bottom of some animals' feet that help them walk and balance

Visual	Term	Definition
	tail	part of some animals that help them stay balanced -sometimes used like an arm to grab things
	life cycle	series of changes in the life of living things (organisms)
	shelter	a place that people and animals use to protect themselves from their surroundings, such as danger or bad weather
	need	something you have to have to survive

Learning in Action: Grade Level Skills

Examples of Grade Level Skills

Kindergarten students should be able to compare the relative position of various objects observed in their space and outside using position words such as: in front of, behind, between, on top of, under, above, below and beside. Students also can:

- Use their senses to make observations and learn about their environment
- Know that the position of an object can be described by locating the object relative to another object, fixed point, or background
- Know the difference between words used to describe the location of an object such as: in front of, behind, between, on top of, under, above, below, beside
- Communicate using oral language so that all observers can agree on the position of an object in relation to another object.

- Kindergarten students can give examples of different ways objects and organisms move (to include falling to the ground when dropped . Students can also:

    - know the various ways that living and nonliving things can move, to include falling to the ground when dropped unless something holds them up
    - know that earth pulls down on all objects.
    - know how to observe, describe, and discuss all kinds of moving things—themselves, insects, birds, trees, doors, rain, fans, swings, volleyballs, wagons, etc.—keeping notes, drawing pictures to suggest their motion.
    - know how to raise questions about the movement of various organisms to include: Do they move in a straight line or zigzag?
- Kindergarten students should know objects and substances have properties. They should be able to:
    - understand that objects can be described in terms of the materials they are made of (e.g., clay, cloth, paper) and their physical properties (e.g., color, size, shape, weight, texture, flexibility, magnetic attraction, floating or sinking in water).
    - understand that some materials, such as clay and wood, make things hard and sturdy which helps to determine how they are used.
    - understand that some materials such as cloth and paper make things flexible which gives them a different use compared to things that are hard.
- Kindergarten students should know objects may be sorted based on a list of observable properties such as size, color, shape, texture, weight, and flexibility
- Kindergarten students should know how to use observation skills to note characteristics of their environment on a daily basis. They should be able to:
    - know that the weather may be sunny one day and cloudy another day
    - know how to compare their observations and describe how each observation is similar to or different from a previous observation
    - know that weather changes from day to day.
    - know how to maintain a daily weather journal and describe how the weather changes daily.
- Kindergarten students should build on the concept that change is something that happens to many things in the environment to include weather. They also should know:
    - change can happen quickly or slowly.
    - observing daily weather changes, students can infer patterns that occur from season to season.
    - some weather patterns include sunny days, rainy days, windy or cloudy days, snowy days and stormy days.
    - the weather patterns associated with each season: winter, spring, summer and fall (autumn).
    - seasons occur in a particular order and therefore the weather patterns associated with seasons occur in a particular order
- Kindergarten students should know that animals of the same type (i.e. dogs-spaniels/shepherds, cats- solids/tabby, birds-hawk/sparrow, etc.) have individual differences.
- Kindergarten students should know living and nonliving things are made of parts and people give names to the parts that are different from the name of the whole object, plant or animal. They also should know:

  - that the parts of living and nonliving things work best as a whole and some objects can easily be taken apart and put back together again while other objects cannot be taken apart without damaging them (e.g., books, pencils, plants, and animals).
  - some of the characteristics that all animals share that can be used to compare living and nonliving things.
  - that all animals, including humans, have a basic structure that is similar in all animals of the same kind.
- Kindergarten students should know that the human body has distinct structures and that they serve different functions that are similar in other animals. They also should know that:
  - various animals, to include humans, have structure and they should be able to tell how the structures are alike and different and how each structure is used in a similar or different way.
- Kindergarten students should observe and compare how different organisms grow and develop over time. They also should know that:
  - animals change as they grow. The distinct stages of growth and change are called a life cycle.
  - the life cycle begins when the organism is born and begins to develop and ends when the organism dies.
- Kindergarten students should know how various animals move noting similarities and differences.
- Kindergarten students should know that all animals are living things that have basic needs to stay alive. They should also know that:
  - animals need air, water, food, and shelter for protection. If an organism does not get everything that it needs to stay alive, it will die.
  - comparing the characteristics of several animals, students should be able to classify things as living and nonliving based on these characteristics.
  - animals (including humans) are living things that grow and develop, and need food, air, and water but nonliving things do not.
- At this grade level, it is appropriate to define living things as anything that is alive or has ever been alive and nonliving as anything that is not now and has never been alive.

Resources

Links and online resources to allow you to support your child's learning.

- National Geographic Science
- Where's the Monkey Song
- Scratch garden (8 min)
- The Pushes and Pulls Song
- Classification of Materials Video
- Soft and Smooth, Rough and Bumpy
- Sorting Game
- 5 Senses Song
- Check out the weather outside - song
- Sid the science kid video- all my senses

- 20 fun 5 senses ideas
- Changes in weather
- Be a Weather Watcher video
- 4 Seasons Video
- Introduction to Birds
- All About Reptiles
- All About Mammals
- Animals in Action
- All About Fish
- Amphibians
- Living and Non-living things video
- It's Alive: Biology for Kids!
- Push Pull interactive Puzzle

At-Home Connections

- Ask your student to show you what a push or pull looks like.
- Ask your student to show you how to run or walk in a zig zag/straight line, curvy line, or round and round.
- Ask your student to show you how to move something back and forth.
- Ask your student to show you how to move something fast or slow.
- Position game: Ask your student to get in a position around their desk (under, on, beside, in front, etc.)
- Read Where's Walrus by Stephen Savage. This is a wordless book so you can pause on each page to describe where Walrus is using the position of other objects.
- Identify what sense or part of the body he/she would use to describe an object (apple, toy car).
- Bring in a collection (rocks, balls, coins, fruit) and have your student name their size, shape, color, weight, texture, and flexibility.
- Go outside to a playground and observe what materials things are made of. The mulch, the slide, the swing, tent, bench, fence, basketball hoop, sneakers, etc. students make a list of any materials they see. Come in and describe the objects as wood, metal (copper, gold, silver, aluminum, steel, brass), plastic, glass, rubber, leather, canvas, cotton, etc.
- Draw the 4 Seasons
- Create a weather journal and ask your student to describe or draw the weather each day.
- Types of animals - (no talking on video) watch video and discuss types of animals
- Share the North Carolina Zoo educator resources with your student. Ask your student about living and nonliving things at the zoo as well as different types of animals.

Challenges to Anticipate

- Position words (under, over, behind, etc.) can be confusing for young children. It takes lots of practice to understand all the positional words.

- Young children often get confused with the difference between push and pull. Having children physically push or pull something while verbally explaining if they are pushing or pulling will help solidify these words.
- When discussing weather, young children often confuse a sunny day as a hot day. Help your child understand that it can be both sunny and cold.

Communicating with Your Child's Teacher

Still feeling stuck? Reach out to your child's teacher to discuss what you can do further your child's learning. Some questions that might guide your discussion:

- What resources would you suggest I use to support my child?
- Where do you see my child struggling? What can we do together to help?
- What should my child practice at home?
- What collective message can we send together to help my child learn?

Need Technical Help?

Reach out to your student's home school for technical assistance. Include the type of device (PC, Mac, Chromebook, etc.) and browser (Chrome, Firefox, Safari, etc.).