

KINDERGARTEN SCIENCE

Science is the study of nature and behavior of things in the world around us. We learn about subjects by observing, guessing, describing and experimenting. It is a way to better understand how and why things happen. We use our senses to explore what happens in the world and to discover how things work.

The Manitoba Education Kindergarten Curriculum focuses on four clusters of learning outcomes: science skills, trees, colors and paper.

Cluster 1: Science Skills

There are nine categories of science skills that children will develop throughout their early years in school (grades K-2). In Kindergarten, children are introduced to these skills and throughout all learning experiences will practice them.

Cluster 2: Trees

As children are beginning to become curious about the world around them, looking at trees helps encourage that curiosity. Children will do observations of trees, look at all seasons of the year and learn basic parts and uses of trees.

Cluster 3: Colours

Colours are often one of the first concepts that children begin to learn. Through this learning children will observe colours in their environment, expand their ability to describe items based on colour and look at how mixing colours can create new ones.

Cluster 4: Paper

Paper is a product that has so many variations, types and characteristics. Children will explore this product in many hands-on ways strengthening their fine motor skills. Children will have opportunities to cut, tear, fold and create items from paper, while identifying, describing and exploring the material.

Chart for Science Skills

Concept	Description	Examples
Initiating	Ask questions, recognize a problem and make predictions (guesses) about what will happen.	What's going to happen? - Read a story to children and before turning the page ask them to guess what will happen next.
Researching	Seek information from others and compare ideas and information.	Observe what children are interested in or talking about. Set up an invitation to play based on that interest with materials for them to explore. https://theimaginationtree.com/creating-invitations-to-play/
Planning	Brainstorm with the class, develop ways to look at an object and select materials to use.	What will roll? - Take a ramp and some random objects. Set it up for children to test their ideas of which will roll down the ramp. https://www.prekinders.com/ramps-in-the-science-center/
Implementing a plan	Use materials, make objects, identify improvements, respond to ideas of others, participate as a group, say questions and follow safety rules.	Gather recycled materials, tape, and scissors. Make a plan to build a tower/bridge/etc. using only those materials.
Observing, Measuring, Recording	Use all five senses, describe events using long time and short time, record observations using drawings.	Sink or Float - have a container of water and a random assortment of objects. Take each object and put it in the water to see what will happen. https://www.fantasticfunandlearning.com/sink-or-float.html
Analysing and Interpreting	Make graphs together, compare data using words more, less and same, place materials/objects in a sequence or grouping.	Make a bar graph - ask children questions about their favorite fruit/sport/colour. Together compare the data and make a bar graph of the results. http://mccarterkindergarten.blogspot.com/2010/08/favorite-crayon-color-graph.html
Concluding and Applying	Find connections, describe what was done and what happened.	Magnet magic - place a number of materials on a table with a magnet wand. Children will test to see which items stick to the magnet and which do not. https://www.prekinders.com/magnets/
Reflecting on Science and Technology	Understand we can learn through observing and investigating.	Inside or Outside - ask children what do they see? What do they hear? What do they smell? What do they feel?
Demonstrating Scientific and Technological Attitudes	Be open-minded, participate and show enjoyment.	Watch and observe children's reactions to new experiences. Engage them with excitement and enthusiasm.

Chart for Trees

Concept	Description	Examples
Use appropriate vocabulary related to their investigations of trees.	Use words like tree, trunk, crown, branch, leaf, needle, bark, root, seed, winter, spring, fall and summer.	Nature Scavenger Hunt - Create a list of nature objects. Go outside and see if the children can find all the items listed on the list when walking around.
Identify ways in which humans and animals use trees.	Examples: humans eat apples and walnuts, birds make their homes in trees, deer eat leaves, bark and twigs.	Fort building with trees/sticks/blankets/rope
Identify and describe basic parts of a tree.	Recognize trunk, crown, branch, leaf, bark, root and seed.	Collect sticks and leaves and glue them to paper in the shape of a tree.
Explore, sort, and classify leaves, using their own classification system.	Divide leaves by size, colour, pattern, length and shape.	Go for a walk and collect leaves, when you get back play a matching game.
Name and describe each of the four seasons.	Know the differences between winter, spring, fall and summer.	Talk about clothing that we wear in each season. Ask questions like "what do we wear in winter when there is snow outside?"
Recognize that some trees lose their leaves in the fall, while others do not.	Compare the cycles of different kinds of trees. For example fir tree versus maple tree.	Be a tree - act out the lifecycle of a tree. Pretend to be seeds that are planted and then grow into trees and lose your leaves.
Describe seasonal changes in the life of a tree.	Example: leaves of some trees change colour and drop off in the fall.	Use paper and crayons/markers and draw a tree in each season.
Investigate to determine that many trees produce seeds which are dispersed and may grow into new trees.	Look at how new trees are formed.	Planting seeds - take some seeds and place them in soil. Give them water and sun. Watch them grow. https://littlebinsforlittlehands.com/easy-seed-experiments-kids/

Chart for Colours

Concept	Description	Examples
Use appropriate vocabulary related to their investigations of colours.	Recognize red, yellow, blue, orange, brown, black, white, purple, green, gray, and pink. Use words mix, light, dark, match and primary colour.	Spread out a package of crayons on the table. Color a picture with the child and ask them to pass you specific colors.
Compare and contrast colours using appropriate terms.	Compare using lighter than, darker than and brighter than.	When folding clean laundry sort the clothes into colors and then sort by light/dark of colors (ex. Light blue jeans together and dark blue jeans together)
Sort and classify objects by colour.	Put items into different colour categories.	Sort toys by color during clean up time.
Order a group of objects based on a given colour criterion.	Example: order objects of the same colour range from lightest to darkest.	Line up all (blue etc.) toys in order from light to dark.
Predict and describe changes in colour that result from mixing of primary colours and from mixing a primary colour with white or black.	Using red, yellow, blue, white and black to mix in different combinations.	Use a clear dish and melt different color freezies in it. Guess and observe the color mixtures.
Create a colour to match a given sample by mixing the appropriate amounts of two primary colours.	Example: how do you make the colour orange? Mix red and yellow.	Use a clear dish filled with water. Add in drops of food coloring and get the child to guess the colors as they mix.
Explore to identify and describe colours found in their environment.	Examples: rocks, flowers, shells, blocks, crayons.	Go for a walk and play I Spy with colors.

Chart for Paper

Concept	Description	Examples
Use appropriate vocabulary related to their investigations of paper.	Use words like characteristic, thick, thin, hard, soft, smooth, rough, absorbent, pliable.	Go for a walk and collect interesting objects. Talk about the texture of each object and use words like (smooth, rough, thin etc.) to describe the object.
Identify kinds of paper that can be found in the classroom.	Example: drawing paper, paper towels, paper plates, books, newspaper, cardboard, tissue paper	Look around the house and show items that are made from different kinds of paper. (paper plates, paper bags, cardboard cereal boxes)
Recognize that paper is most often made from trees.	Look at how paper comes from trees.	A video on how paper is made from trees: https://www.youtube.com/watch?v=uA56TLfEE9
Observe and compare characteristics of different kinds of paper.	Compare colour, thickness, stiffness and texture of papers.	Paper walk - place different kinds of paper on the floor (ex. Cardboard, tissue paper, wrapping paper). Have children walk on them with bare feet and talk about the differences.
Compare characteristics of different kinds of paper that make them easy or difficult to cut, tear or fold.	Example: cardboard is thicker than newspaper and harder to fold.	Gather empty cereal boxes and old papers. Cut them both into squares and draw money amounts for play money. Compare with the child on the differences and which material works better.
Explore to determine an appropriate kind of paper for a particular task.	Example: paper towels are useful for cleaning up a spill	Walking water - fill a couple of glasses with water and food colouring. Place a folded piece of paper towel with one end in one glass and the other end in a different glass. Observe. https://www.messylittlemonster.com/2018/06/rainbow-walking-water-science-experiment.html
Use the design process to construct a paper product for a particular use.	Make items out of paper, for example a paper cup, envelope, paper mat, or box.	Paper airplane - Give children a piece of paper and ask them to make a paper airplane. Then fly them to see how they work.