

# Kindergarten Science

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Kindergarten

## **Cluster 1: Trees**

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### **Overview**

In Kindergarten, an investigation of trees capitalizes on students' curiosity about the world around them. Students' observations of trees, including their seasonal changes, are complemented by a study of basic parts and uses of trees.

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
<p><i>Students will...</i></p>	
<p><b>K-1-01</b> Use appropriate vocabulary related to their investigations of trees. Include: tree, trunk, crown, branch, leaf, needle, bark, root, seed, winter, spring, fall, summer. GLO: C5, D1, D5</p>	<ul style="list-style-type: none"> <li>➤ Introduce, explain, use, and reinforce vocabulary throughout this cluster.</li> <li>➤ <b>Picture Word Chart</b> Chart vocabulary words for this cluster. Beside each word, and include a picture that helps to identify it. Have students work in pairs. One student points to the picture. The second student points to the word and identifies what it says. (Post the chart and encourage students to refer to the chart during free play or centre activities.)</li> </ul>
<p><b>K-1-02</b> Identify ways in which humans and other animals use trees. <i>Examples: humans eat apples and walnuts; birds make their homes in trees; deer eat leaves, bark, and tender twigs...</i> GLO: B1</p> <p><b>K-1-03</b> Identify and describe basic parts of a tree. Include: trunk, crown, branch, leaf, bark, root, seed. GLO: D1, E2</p>	<ul style="list-style-type: none"> <li>➤ <b>Observing the Environment</b> As a class, take a walk in the schoolyard or surrounding neighbourhood. Have the students ask questions about and observe several different types of trees. Point out the basic parts of the tree. Have students draw or paint a picture of a tree that they saw on their walk. Encourage students to include many details. Collect fallen leaves of different colours from a variety of trees to be used later in K-1-04 <b>Leaf Sort</b>.</li> <li>➤ <b>Tree Centre: Tree Uses</b> Prior to visiting the Tree Centre, have students ask people in the school and family members at home about ways that humans and other animals use trees. At the Tree Centre have objects (both natural and human-made) that come from trees for students to explore. Have students search through magazines to find pictures to show how both animals and people use trees, and work in small groups to use these pictures to make a collage.</li> </ul>
<p><b>K-0-1a.</b> Ask questions that demonstrate a curiosity about living things, objects, and events in the immediate environment. (ELA 1.2.4, 3.1.2, 3.1.3) GLO: A1, C2, C5</p> <p><b>K-0-2a.</b> Seek information from others. <i>Examples: people at school, at home, in the community...</i> (ELA 3.2.2, 3.2.4; Math SP-II.1.0) GLO: C6</p> <p><b>K-0-3c.</b> Select materials to be used. GLO: C2, C3</p> <p><b>K-0-4e.</b> Participate in cooperative group learning experiences. (ELA 5.2.1) GLO: C7</p> <p><b>K-0-5c.</b> Record observations using drawings. (ELA 4.1.2, 4.2.5) GLO: C6</p> <p><b>K-0-7b.</b> Describe, in a variety of ways, what was done and what was observed. <i>Examples: concrete materials, drawings, oral language...</i> (ELA 4.1.2, 4.1.3) GLO: C6</p> <p><b>K-0-9a.</b> Be open-minded while exploring. GLO: C5</p>	

(continued)

TEACHER NOTES

SUGGESTIONS FOR ASSESSMENT

**Cluster Note:** This cluster should be an ongoing theme throughout the year as students observe trees through the seasons. Some learning experiences are more appropriate to one particular season; others should be repeated in different seasons.

Emphasize the number and variety of trees that can be seen, while drawing students' attention to the common parts.

The **crown** is the top of the tree (branches, leaves, etc.).

Bring items made from trees into the classroom for students to examine.

**Checklist: Observing the Environment**

To provide formative data, use a checklist to assess students' drawings related to tree observations. Example:

The drawing includes

- trunk
- leaves/needles
- branches
- roots
- realistic colours
- other (nests, seeds, cones, insects, etc.)

PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
<p><i>Students will...</i></p>	<p>➤ <b>“Build a Tree” Role Play</b></p> <p>Have students role play the parts of a tree. Ask them to lie on the floor and build the tree from the roots to the crown. Make signs for each part of the tree, including a picture and the word for each part. Depending on the number of people in the class, there could be four roots, three trunks, six branches, eight leaves, and three acorns. As the students build the tree, use the following questions to guide them:</p> <ul style="list-style-type: none"> <li>• What holds the tree in the ground and gives it food and water?</li> <li>• What part of the tree helps it stand tall and is covered with bark?</li> <li>• In which parts of the tree do birds build their nests?</li> <li>• What part of the tree gets food from the sun and gives the tree its colour?</li> <li>• From which part of the tree will another tree grow?</li> </ul> <p>➤ <b>Sketch and Label Tree Parts</b></p> <p>Have the students draw a picture of a tree. Post the signs used in the <b>Role Play</b> activity and ask students to label the parts of the tree on their drawing.</p>
<p><b>K-1-04</b> Explore, sort, and classify leaves, using their own classification system.</p> <p><i>Examples: size, colour, pattern, length, shape...</i></p> <p>GLO: C2, D1, E1</p>	<p>➤ <b>Looking at Leaves</b></p> <p>Have the students observe the leaves they have collected. Have students record their observations on a class chart in response to the following questions:</p> <ul style="list-style-type: none"> <li>• What colours and shapes do you see?</li> <li>• How do the leaves feel?</li> <li>• What size are the leaves?</li> <li>• What patterns do you see?</li> </ul>
<p><b>K-0-4e.</b> Participate in cooperative group learning experiences. (ELA 5.2.1) GLO: C7</p> <p><b>K-0-5a.</b> Observe using one or a combination of senses. GLO: C2</p> <p><b>K-0-5c.</b> Record observations using drawings. (ELA 4.1.2, 4.2.5) GLO: C6</p> <p><b>K-0-6c.</b> Place materials and objects in a sequence or in groups using a single, self-determined attribute. (Math PR-1.1.0) GLO: C2, C3, C5</p>	<p>➤ <b>Leaf Sort</b></p> <p>Have the students work in groups to sort the leaves according to one attribute and then have them share their sorting rules. Have the groups re-sort their leaves according to a different rule.</p> <p>➤ <b>Guess My Rule</b></p> <p>As a class, play the game “Guess My Rule.” A student sorts the leaves, asks: “What’s my rule?” and selects someone to answer. The student who guesses correctly becomes the leader and sorts the leaves another way. The game continues until the group runs out of sorting attributes.</p> <p>➤ <b>Art Connection</b></p> <p>At the Art Centre, have the students do leaf rubbings to observe the patterns made by the leaves.</p>

TEACHER NOTES

SUGGESTIONS FOR ASSESSMENT

**Paper and Pencil Task: Parts of the Tree**

To determine student understanding of the parts of a tree and the related vocabulary, give each student a picture of a deciduous tree. Give the following oral instructions:

- Colour the trunk brown.
- Colour two leaves green.
- Colour one branch orange.
- Colour the roots red.
- Colour the crown brown.

If you laminate the leaves, they will keep their colour and will not dry and crumble. Laminated leaves can be kept for many years.

**Performance Task: Leaf Sort**

Work with individuals or small groups. Give each student a selection of leaves. Have the student sort the leaves in one way and then tell the sorting rule. Have the student re-sort the leaves in another way and give the rule.

**Scoring Rubric**

- 4 The student is able to sort the leaves in more than one way. The sorting rules are clearly and accurately communicated.
- 3 The student is able to sort the leaves in more than one way. The sorting rules are evident but not clearly communicated.
- 2 The student is able to sort the leaves in one way. The sorting rule is clearly and accurately communicated.
- 1 The student is able to sort the leaves in one way. The student has difficulty communicating the sorting rule.

PRESCRIBED LEARNING OUTCOMES
<i>Students will...</i>
<p><b>K-1-05</b> Name and describe each of the four seasons. GLO: D6</p> <p><b>K-1-06</b> Recognize that some trees lose their leaves in the fall, while others do not. GLO: D1</p> <p><b>K-1-07</b> Describe seasonal changes in the life of a tree. <i>Examples: leaves of some trees change colour and drop off in the fall...</i> GLO: D1</p>
<p><b>K-0-1b.</b> Make predictions as to what might happen during explorations. (ELA 1.2.1) GLO: A1, C2</p> <p><b>K-0-2b.</b> Compare gathered ideas and information to personal knowledge. (ELA 3.2.3, 3.3.3; Math SP-IV.1.0) GLO: C6, C8</p> <p><b>K-0-4f.</b> Verbalize questions during classroom learning experiences. GLO: C6</p> <p><b>K-0-7a.</b> Recognize connections between new experiences and prior knowledge. (ELA 1.2.1) GLO: A2</p> <p><b>K-0-7b.</b> Describe, in a variety of ways, what was done and what was observed. <i>Examples: concrete materials, drawings, oral language...</i> (ELA 4.1.2, 4.1.3) GLO: C6</p>

SUGGESTIONS FOR INSTRUCTION

➤ **Identifying the Four Seasons**

As a class, brainstorm and list the four seasons. Discuss what a crabapple (or other common) tree might look like through the four seasons.

➤ **Comparing Trees**

Have students view through pictures, in person, or using multimedia, a deciduous tree and a coniferous tree.

As a class, make comparisons between the two, including what happens to each in the fall, on a chart similar to the following:

<b>Oak</b>	<b>Spruce</b>
has leaves	has needles
has acorns	has pinecones
leaves fall off	needles are always there

➤ **Adopt a Tree**

At the start of the school year, have the students “adopt” a tree. Have the class make predictions as to how the tree will change during the different seasons, and then have them observe the tree over the course of the school year.

Each season, have the students observe and record the appearance of the tree through drawings and words. The drawings could be part of a student-made booklet that is kept over the course of the year. Ask these questions each time the students make their observations:

- Are there any leaves on the tree? If so, what size and colour are they?
- Are there any fruit or nuts, buds or flowers growing on the tree?
- Are there any animals living in or on the tree?

TEACHER NOTES

SUGGESTIONS FOR ASSESSMENT

It would be beneficial to adopt two different trees if possible, one deciduous and one coniferous. This would allow students to see the similarities and differences between them.

**Interview: The Four Seasons**

For this assessment task gather the following materials:

- a set of pictures (no more than eight) that shows children, plants, and animals at different seasons of the year. Example: child(ren) building a snowman, child(ren) at the beach, bear(s) hibernating, bird(s) feeding babies, squirrel(s) gathering nuts, etc.
- a picture of a deciduous tree in each of the four seasons
- pictures of a deciduous tree with leaves and a coniferous tree with needles

Observe individual students as they perform the tasks and record their responses.

1. Can you name the four seasons? Check those given.

- Spring     Summer     Fall     Winter

2. Here is a set of pictures. These pictures show people, plants, and animals doing different things. Can you find a picture that shows something that might happen in

- Spring?     Summer?     Fall?     Winter?

Notes: \_\_\_\_\_

3. Show the four pictures of the deciduous tree. Some trees look different in each season. Can you show the tree in

- Spring?     Summer?     Fall?     Winter?

If you put the pictures in order from spring to winter, what picture would come first? Next?

Notes: \_\_\_\_\_

4. Can you tell me something about each of the pictures?  
(Does the student accurately describe the changes for each season?) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



PRESCRIBED LEARNING OUTCOMES	SUGGESTIONS FOR INSTRUCTION
<p><i>Students will...</i></p>	
<p><b>K-1-08</b> Investigate to determine that many trees produce seeds which are dispersed and may grow into new trees. GLO: C2, D1</p>	<p>➤ <b>Seeds from Trees</b></p> <p>During the spring, have the students collect seeds from trees. This could be a “home” assignment. The collection will need to be supplemented to provide a wide variety of examples such as helicopter seeds (maple), acorns, pinecones, and fluff from cottonwood trees.</p>
<p><b>K-0-1a.</b> Ask questions that demonstrate a curiosity about living things, objects, and events in the immediate environment. (ELA 1.2.4, 3.1.2, 3.1.3) GLO: A1, C2, C5</p> <p><b>K-0-4g.</b> Follow given safety procedures and rules. (ELA 2.1.2) GLO: C1</p> <p><b>K-0-5c.</b> Record observations using drawings. (ELA 4.1.2, 4.2.5) GLO: C6</p> <p><b>K-0-8a.</b> Recognize that learning can come from careful observations and investigations. (ELA 3.3.4) GLO: A1, A2, C2</p> <p><b>K-0-9b.</b> Willingly observe, question, and explore. GLO: C5</p> <p><b>K-0-9c.</b> Express enjoyment of science-related classroom activities. GLO: C5</p>	<p>Have students examine the seeds with a hand lens to observe similarities and differences. Use the following questions to focus discussion:</p> <ul style="list-style-type: none"> <li>• What does the seed look like?</li> <li>• Do you see anything on the seed that might help it move from place to place?</li> <li>• What is the purpose of the seed?</li> </ul> <p>Plant a seed and water it until it sprouts.</p>
	<p>➤ <b>Matching Tree and Seed</b></p> <p>Using card stock, glue several seeds onto one half of a card, and a picture of the tree from which the seed comes on the other half. Cut the card like a puzzle piece, and place the pieces in a learning centre. Repeat with different kinds of seeds and trees. Have students match the seed to the tree.</p> <p>➤ <b>Science Stories and Songs</b></p> <p>Create a group story, song, or rhyme telling about the life of a tree as it grows from seed to maturity, and throughout the seasons.</p>

**TEACHER NOTES**

It may be difficult for students to distinguish between seeds from trees and seeds from other plants. Encourage them to look for seeds on the ground and then look up to find the same seeds on the tree.

**SUGGESTIONS FOR ASSESSMENT**

**Observation Checklist: Seeds from Trees**

Throughout the investigation of seeds, observe and note evidence of the following skill- and attitude-related behaviours:

The student

- willingly observes, questions, and explores
- expresses enjoyment of the learning experiences
- records observations using drawings
- uses the hand lenses safely and purposefully
- asks questions related to seeds and trees

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