
Grade 1 How might an animal meet its shelter needs?

Experience 3: Materials Exploration and Materials Scavenger Hunt

In this set of learning experiences, teachers will guide students using an inquiry model to explore topics such as living and nonliving things, the needs of living things, as well as, matter and materials. Students will then apply that knowledge to complete a challenge in which students will use the engineering design process to build a structure for a bird.

There are 4 specific learning experiences outlined in this series and including

Experience 1: Nature Walk Provocation/Outdoor Investigation





Experience 2: Needs of Living Things Snail Investigation

Experience 3: Materials Exploration and Materials Scavenger Hunt


Experience 4: Design Challenge-Build a Bird Nest and/or a Birdhouse

[Long Range Plan Grade 1 Model 1](#) "September"

Overview of learning experiences	Building on the previous two learning experiences (Nature Walk and Snail Investigation), in this activity, students will explore how a healthy environment enables living things (including humans) to meet their needs. This lesson focuses on materials used to make a variety of objects, and the properties of materials that make it a suitable choice. Long Range Plan Grade 1 Model 1 "September"
Prior Knowledge / Prior Skill Set(s)	The beginning of the year is a great time to define science as a method for acquiring knowledge of the world and review the steps of the scientific process (observation, question, research, hypothesis, experiment, analysis, and conclusion/communication). In this series of learning experiences, the teacher will model the scientific process, beginning with what it means to make observations using our senses. Teachers can also consider introducing a science journal as a place to record questions and observations with pictures and notes. It may be helpful to model this process as well, choosing instead to record ideas on a piece of chart paper as a class. As students gain familiarity with the process, journals can be used as a form of assessment. September is also an important time to establish routines and safety procedures, especially during science investigations.

	<p>Students should have a thorough understanding of how to safely handle any tools and/or materials.</p> <p>Students do not need any prior knowledge for this series of learning experiences. The provocation activity and subsequent knowledge circle is instead an opportunity for teachers to assess student knowledge about living and nonliving things, and use questions generated from the nature walk to inform the next steps of the inquiry.</p>
<p>Strand A - STEM Investigation and Communication Skills</p>	<p>A. STEM Skills and Connections</p> <p> A1.1 use a scientific research process and associated skills to conduct investigations</p> <p> A1.2 use a scientific experimentation process and associated skills to conduct investigations.</p> <p> A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems.</p> <p> A1.4 follow established health and safety procedures during science and technology investigations, including wearing appropriate protective equipment and clothing and safely using tools, instruments, and materials.</p>
<p>Overview / Big Ideas/Fundamental Concepts</p>	<p>Fundamental Concepts:</p> <ul style="list-style-type: none"> ● Systems and Interactions ● Structure and Function <p>In this lesson series, students will make connections between several strands of science including</p> <ul style="list-style-type: none"> A. STEM Skills and Connections B. Life Systems: Needs and Characteristics of Living Things D. Structures and Mechanisms: Everyday Materials, Objects, and Structures <p>Following the scientific method steps, students will begin by participating in a nature walk and outdoor investigation, with a strong focus on observation. Students are invited to document what they see, hear, touch and smell. As part of their initial exploration,</p>

	<p>students may make note of both living and non-living things, natural and built elements of the environment, as well as generate important questions and wonderings that will guide our inquiry. Back in class, students will identify the basic needs of living things, including the need for air, water, food, heat, shelter, and space, and determine how a healthy environment enables living things to meet their needs. In the next activity, students will identify materials that are used to make various everyday objects, including structures. Following a scavenger hunt activity, students will be able to identify properties of materials that enable the objects made from them to perform their intended function. In the final challenge, students will use the engineering design process to construct a birdhouse to consolidate their understanding. Students will present their designs, and materials used, and reflect on the building process.</p>
<p>Learning Goals / Success Criteria</p>	<p>What is the main goal?</p> <p>By the end of this learning experience students will be able to:</p> <ul style="list-style-type: none"> ● Identify materials used to make everyday objects and structures ● Describe the properties of materials ● Relate form to function when examining materials used to make different objects including structures <p>Educators are encouraged to co-create success criteria with students and share “I Can Statements” based on the curricular expectations. Sharing options can include:</p> <p>In-person:</p> <ul style="list-style-type: none"> ● Knowledge Circle ● Science Journals ● Scavenger Hunt Graphic Organizer <p>Online:</p> <ul style="list-style-type: none"> ● Science Journal ● Presentation ● Breakout Room Showcase <p>Ministry of Education Key Points</p> <ul style="list-style-type: none"> ● STEM Skills and Connections: Perspectives and approaches that provide opportunities for students to investigate and apply concepts and skills from all areas of learning.

	<ul style="list-style-type: none"> ● Research and Experimentation Processes: Provides students with the scientific literacy skills needed to approach scientific questions that are becoming a part of everyday life. ● Hands-on, Experiential Learning: Includes hands-on, experiential learning opportunities to support classroom activities that encourage curiosity.
<p>Learning Experience(s)</p>  <p>A.1.1, A.1.2, A.1.3, A.1.4</p>	<p>In the following learning experiences, students will build upon their existing knowledge and understanding of the natural world. Beginning with a nature walk, students will be able to observe and take note of a variety of living and non-living things. The shared experience will help to foster wonder and curiosity, and to assess student knowledge, questions, and/or misconceptions. From there, in subsequent lessons, students will explore how the environment meets the needs of living things, including materials used to make everyday objects and structures. Students will then apply their learning and follow the engineering design process to construct a nest or birdhouse.</p> <p>Lesson 3: Materials Exploration and Scavenger Hunt</p> <p>Resource: Science North Materials Matter!</p> <p>Minds On (~10-15 min.)</p> <ol style="list-style-type: none"> 1. Write the question “What are materials?” on the board and pose this question to the class. What are materials? Can you give an example of a material? Some materials are natural (come from the environment) while others are synthetic (human-made). Look around the room at the different objects. What materials do you see? Are they natural or synthetic? It may be helpful to have a running list of materials that students can refer to during the scavenger hunt activity. It may be helpful at this point to define object, material and structure. 2. Explain that builders and engineers use the properties of the material to match the function of the object (form follows function). Discuss using these guiding questions: <ul style="list-style-type: none"> ○ What materials do we use to build schools? Or stuffies? ○ Why? ○ What properties make it suitable? ○ Would you want to make a house of balloons? Why or why not?

- Or clothes made of bricks?

Define **properties of materials** as descriptive characteristics of the material (e.g. hard, soft, texture, shape, weight, bendy, strong, etc.)

Optional activity: To help students to better understand the properties of materials, play the mystery box/bag game. (e.g., repurpose an old shoe box and cut a small hole in the top. Place a mystery object inside and invite 1-2 students to use their sense of touch to describe the object to the class. The class must use those clues to deduce what the mystery object might be)

Action (~15-20 min.)

1. Tell students to put on their 'detective hats.' They are going to pick 3 objects around the classroom to sketch and try to deduce what materials the object is made of.
2. Introduce [Science North's Materials Scavenger Hunt](#) (pg 3). Do 1-2 examples as a class. For example, a pencil (wood, metal, rubber, lead/graphite?) or a toy car (plastic, metal?) If students are finished early, challenge them to pick 3 more objects to sketch and identify the material components or to on to onto the next challenge.
3. Time permitting, introduce early finishers, or the whole class to the Materials Scavenger Hunt (see [Appendix A: Materials Scavenger Hunt](#)). This time, challenge students to find or spy 10 items made of a particular material. Alternatively have students complete the review exercises on [Science North's Handout \(page 4-5\)](#).

Consolidation (~5-10min.)

1. Gather as a class and have students share their findings (an object they chose and the materials they think it is made of and/or go over the second scavenger hunt). What materials are used a lot? What properties of the material make it so versatile?

*This can be an opportunity to bring up resource management. What happens if we cut down too many trees? What happens to materials when they are no longer needed?

Optional: Have students complete the review exercises on [Science North's Handout](#) (pages 4-5) to consolidate learning or to draw and label examples of materials in their science journals.

	<p>What the students do:</p> <p>Initiating and Planning</p> <ul style="list-style-type: none"> ● Brainstorm and share ideas about materials both natural and human-made (synthetic) <p>Performing and Recording</p> <ul style="list-style-type: none"> ● Identify properties of materials and use descriptive language ● Engage in a scavenger hunt, identifying materials used to make different objects <p>Analyzing and Interpreting</p> <ul style="list-style-type: none"> ● Use properties of materials and/or function of an object to deduce its material components ● Record scavenger hunt findings on the graphic or in a science journal <p>Communicating</p> <ul style="list-style-type: none"> ● Share the results of the scavenger hunt activity-identifying the materials that are used to make different objects and/or items that are made of a particular material
<p>Science and Technology Expectations</p>	<p>D. Structures and Mechanisms: Everyday Materials, Objects, and Structures</p> <p>D2.3 identify materials that are used to make various everyday objects, including structures</p> <p>D2.4 describe observable characteristics of various everyday objects, including structures, using qualitative information gathered through their senses</p> <p>D2.6 identify properties of materials that enable the objects made from them to perform their intended function</p> <p>D2.8 identify sources in nature of some common materials that are used to make various objects, including structures</p>
<p>Science and Technology Vocabulary</p>	<ul style="list-style-type: none"> ● Observe*: to watch carefully, or to make a scientific observation ● Object*: something that can be perceived by the senses ● Material: Matter from which other things can be made. ● Natural*: existing in or produced by nature ● Synthetic*: produced artificially <p>*Definitions taken from Britannica Kids Online Dictionary https://kids.britannica.com/</p>

<p>Equipment and Materials</p>	<ul style="list-style-type: none"> ● Clipboards (optional) ● Scavenger hunts and other worksheets ● Sample objects made of different materials <p>Lesson 3 Material Exploration and Scavenger Hunt</p> <ul style="list-style-type: none"> ● Science North Materials Scavenger Hunt (page 3) + Worksheet (pages 4-5)*Optional ● Optional: Materials Scavenger Hunt (see Appendix A: Materials Scavenger Hunt) ● Optional: Mystery Box/Bag and objects game
<p>Timeline and Preparation</p>	<p>Experience 3 Material Exploration and Scavenger Hunt (~1 period)</p> <p>First Steps: Print copies of the linked scavenger hunt and prepare a mystery bag/box game and objects (Optional).</p> <p>Next Steps: Collect and review scavenger hunt results. Assess student understanding and review items/materials that were challenging for students to identify.</p> <p>This can link to a discussion about waste and how long different materials take to decompose. Alternatively, students may be interested in watching a video on how different common objects (e.g. pencils) are made.</p>
<p>Safety Considerations</p>	<p>What does the teacher do?</p> <ul style="list-style-type: none"> ● Ensure students are aware of boundaries for the scavenger hunt investigation <p>What do the students do?</p> <ul style="list-style-type: none"> ● Follow established safety procedures. ● Handle objects with care <p>Refer to these Safety resources:</p> <ul style="list-style-type: none"> · Safety in Elementary Science and Technology (STAO) · Safe Activity Foundations in Education Document (SAFEdoc) Science and Technology, Grades 1-8 (OCTE) · Ontario Curriculum Program Planning – Health and Safety

<p>Opportunities For Assessment</p>	<p>According to the Ministry of Education Growing Success Document (2010) assessment is about improving student learning!</p> <p>Assessment FOR Learning: Occurs frequently and in an ongoing manner during instruction, while students are still gaining knowledge and practicing skills and is used by teachers to monitor students' progress towards achieving the overall and specific expectations, so that teachers can provide timely and specific descriptive feedback to students, scaffold next steps, and differentiate instruction and assessment in response to student needs.</p> <p>Assessment AS Learning: Occurs frequently and in an ongoing manner during instruction, with support, modelling, and guidance from the teacher and is used by students to provide feedback to other students (peer assessment), monitor their own progress towards achieving their learning goals (self-assessment), make adjustments in their learning approaches, reflect on their learning, and set individual goals for learning.</p> <p>Assessment OF Learning: Occurs at or near the end of a period of learning, and may be used to inform further instruction and is used by the teacher to summarize learning at a given point in time. This summary is used to make judgements about the quality of student learning on the basis of established criteria, to assign a value to represent that quality, and to support the communication of information about achievement to students themselves, parents, teachers, and others</p> <p>Please use the following links for reference: https://www.dcp.edu.gov.on.ca/en/assessment-evaluation https://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf</p> <p>Throughout this series of learning experiences, a combination of observation, discussion, reflections, journals, and student work samples are used to assess learning.</p> <p>Experience 3: Assessment FOR Learning/AS Learning Opportunity</p> <p>This lesson is designed to introduce students to different materials, used to make everyday objects. The mystery bag/box game (if used) can be an opportunity for teachers to make notes anecdotally of students' understanding of what properties of materials are.</p>
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	<p>Following the activity, the students' scavenger hunt page(s) can be used as an example of student thinking and understanding.</p>
<p>Instructional Strategies and Adaptability</p>	<p>Program Planning and Equity and Inclusion and CRP: https://www.dcp.edu.gov.on.ca/en/program-planning/considerations-for-program-planning/human-rights-equity-and-inclusive-education</p> <p>These learning experiences make use of a variety of instructional strategies. You may wish to further adapt, modify or change the lessons as indicated to suit the needs of your students.</p> <p>You may wish to scribe ideas for students who require extra support. Or alternatively, share and journal ideas (questions, observations, etc.) together as a whole class. With practice, students will have a better understanding of what they may want to include.</p> <p>You may wish to partner students up to facilitate more peer support and collaboration.</p> <p>Some students may benefit from having the vocabulary and definitions on a handout sheet as well as being able to see and refer to them on a bulletin board.</p>
<p>Additional Supporting Resources</p>	<p>Science North</p> <ul style="list-style-type: none"> ● Materials Matter!
<p>Cross-Curricular Opportunities</p>	<ul style="list-style-type: none"> ● Draw and label a plan for an object design challenge ● Compare measurable attributes of different objects and/or structures (ex Which basket holds more? Which ruler is heavier-wood or plastic? Order natural/built structures by size, etc.) ● Use a science journal to record observations (elements of the natural environment, mind map of natural and build structures, questions, learning, reflections, etc.) ● Practice procedural writing to outline the steps needed to build a structure <p>LANGUAGE:</p> <p>Oral Communication</p> <ul style="list-style-type: none"> ● Listen in order to understand classmates when sharing observation journals. ● Use speaking skills and strategies appropriately to




	<p>communicate when in the field and in the classroom.</p> <p>Writing</p> <ul style="list-style-type: none"> ● Generate, gather, and organize ideas and information to write for an intended purpose and audience. <p>SOCIAL STUDIES:</p> <ul style="list-style-type: none"> ● Explore the environmental impact caused by the harvest, creation, and/or disposal of different materials (FOCUS ON: Cause and Consequence) <p>MATH:</p> <ul style="list-style-type: none"> ● Compare measurable attributes of different objects and/or structures (e.g., which basket holds more? Which ruler is heavier-wood or plastic? Order natural/built structures by size, etc.) (Attributes)
<p>Future Opportunities / Next Steps</p>	<p>Further moving forward opportunities for students.</p> <ul style="list-style-type: none"> ● Design an object that serves a purpose, select materials, taking into account material properties (e.g., a soft pillow, a waterproof case, an insulating cozy, etc.) (see Appendix B: Science Engineering/Design Journal) ● Explore the environmental impact associated with the disposal of different materials (eg. plastic vs paper straws) <p>What will learners do when the work is completed/if they finish early?</p> <ul style="list-style-type: none"> ● Go on a materials (e.g. metal, wood, plastic, rubber, glass) and/or properties of materials scavenger hunt around the classroom (e.g. transparent, stretchy, hard, soft, waterproof, etc.) ● Watch a video of how an object (ex. Pencil) is made. <p>Contributions to Science and Technology</p> <ul style="list-style-type: none"> ● Connect with members of the local community to learn more about themes covered in this set of learning experiences (ex. Engineer, Materials Scientist, Waste Management, etc.) ● Investigate material science (e.g., recycled materials, compostable materials, etc.)

Appendix A: Materials Scavenger Hunt

Name: _____

Date: _____

Materials Scavenger Hunt

 Wood	 Metal	 Plastic

Appendix B: Science Engineering/Design Journal

SCIENCE JOURNAL ENTRY PLAN/DESIGN



Name:

Date:

Share your ideas (Draw, Write, Record, Paste, etc)

MATERIALS/TOOLS