

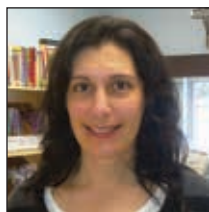
Earth & Space Science

—— Grade 1 ——

Written by Tracy Bellaire

The activities in this book have two intentions: to teach concepts related to earth and space science and to provide students the opportunity to apply necessary skills needed for mastery of science and technology curriculum objectives.

The experiments in this book fall under eleven topics that relate to an aspect of earth and space science: **Daily and Seasonal Changes**. In each section you will find teacher notes designed to provide you guidance with the learning intention, the success criteria, materials needed, a lesson outline, as well as provide some insight on what results to expect when the experiments are conducted. Suggestions for differentiation are also included so that all students can be successful in the learning environment.



Tracy Bellaire is an experienced teacher who continues to be involved in various levels of education in her role as Differentiated Learning Resource Teacher in an elementary school in Ontario. She enjoys creating educational materials for all types of learners, and providing tools for teachers to further develop their skill set in the classroom. She hopes that these lessons help all to discover their love of science!

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Printed in Canada

Published in Canada by:
On The Mark Press
15 Dairy Avenue, Napanee, Ontario, K7R 1M4
www.onthemarkpress.com



Learning Intentions

	Seven Day Cycle	Day and Night	A Year at a Glance	Seasonal Changes	Aboriginal Activities	The Heat of the Sun	In the Light of Day	The Moon	Animals Day and Night	Animal Adaptations	Plant Adaptations
Knowledge and Understanding Content											
Identify the days of the week and determine the sequencing of daily events with a week.	•										
Distinguish the activities done during the day from those done at night in the 24 cycle; sequencing events.		•							•		
Identify the months of the year and sequencing of monthly events that take place in one year.			•	•	•						
Describe the four seasons, in terms of weather, clothing, activities, and how to prepare for each season				•		•					
Describe the activities of Aboriginals throughout seasonal changes.					•						
Determine the amount of heat from the sun that happens throughout the day and the seasons.						•					
Describe the amount of daylight and the sun's position throughout a day and in the seasons.							•				
Describe the shape and position of the moon throughout a month.								•			
Identify and compare the differences of animal activity at night and during the day.									•		
Describe the changes of animal appearance, location, and activity throughout seasonal changes.										•	
Recognize and describe the differences in appearance and behavior of plants throughout seasonal changes.											•
Thinking Skills and Investigation Process											
Make predictions, formulate questions, and plan an investigation						•	•				
Gather and record observations and findings using drawings, tables, written descriptions	•	•	•	•	•	•	•	•	•	•	•
Recognize and apply safety procedures in the classroom	•	•	•	•	•	•	•	•	•	•	•
Communication											
Communicate the procedure and conclusions of investigations using demonstrations, drawings, and oral or written descriptions, with use of science and technology vocabulary.	•	•	•	•	•	•	•	•	•	•	•
Application of Knowledge and Skills to Society and the Environment											
Assess how daily and seasonal changes impact society and the environment					•	•					
Assess the impact that innovations have on daily and seasonal changes on human outdoor activities.				•							

TABLE OF CONTENTS

AT A GLANCE	2
TABLE OF CONTENTS	3
TEACHER ASSESSMENT RUBRIC	4
STUDENT SELF-ASSESSMENT RUBRIC	5
INTRODUCTION	6
SEVEN DAY CYCLE	
Teacher Notes	7
Student Activities	8
DAY AND NIGHT	
Teacher Notes	13
Student Activities	14
A YEAR AT A GLANCE	
Teacher Notes	18
Student Activities	19
SEASONAL CHANGES	
Teacher Notes	25
Student Activities	27
ABORIGINAL ACTIVITIES	
Teacher Notes	38
Student Activities	39
THE HEAT OF THE SUN	
Teacher Notes	44
Student Activities	46
IN THE LIGHT OF DAY	
Teacher Notes	57
Student Activities	59
THE MOON	
Teacher Notes	66
Student Activities	68
ANIMALS – DAY AND NIGHT	
Teacher Notes	77
Student Activities	78
ANIMALS ADAPTATIONS	
Teacher Notes	81
Student Activities	83
PLANT ADAPTATIONS	
Teacher Notes	90
Student Activities	91



THE HEAT OF THE SUN

LEARNING INTENTION:

Students will learn about heat from the sun that happens throughout the day and the seasons.

SUCCESS CRITERIA:

- identify the benefits of the sun
- determine temperature readings and make connections to appropriate clothing
- recognize differences in the sun's heat throughout the day
- identify ways to keep comfortable at different temperatures
- make connections to their daily lives

MATERIALS NEEDED:

- a copy of "Help From the Sun" Worksheet 1 for each student
- a copy of "Feel the Heat" Worksheets 2 and 3 for each student
- a copy of "Taking a Reading" Worksheets 4 and 5 for each student
- a copy of "What to Wear?" Worksheet 6 for each student
- a copy of "What's the Temperature?" Worksheets 7, 8, 9, 10 for each student
- a copy of "Get Comfortable!" Worksheet 11 for each student
- a warm sunny day, **students are to wear sunscreen, hat, and sunglasses**
- a large thermometer (teaching thermometer)
- outdoor thermometers (one for each student or pair of students)
- chart paper, markers, rulers
- pencils

PROCEDURE:

***This lesson can be done as one long lesson, or be divided into four or five shorter lessons.**

1. Discuss with students the idea that the sun is the Earth's main source of heat and light. Divide students into pairs and give them Worksheet 1. They will work with a partner to think-pair-share an answer to the question. A next step would be to encourage students to share their responses to the large group. This would lead to some rich discussion about the impact that the sun has on our lives.
2. On a warm sunny day, take students out for a walk. (Ensure they wear sunscreen, hat, and sunglasses). Give them Worksheets 2 and 3, a clipboard, and a pencil. It may be beneficial to discuss what '**describe**' and '**predict**' mean before starting this activity. Inform students that they are to make some observations about how the sun feels on their skin. Once the observation is completed, an option would be to return to the classroom and discuss their findings.
3. Using a large (teaching) thermometer, teach students how to read the temperature on a thermometer. Ensure students are able to relate a certain temperature to a type of weather, and determine what clothing to wear. Give students Worksheets 4, 5, and 6 to complete.
4. Brainstorm with the students a list of words to describe temperature and the outside air. Some examples are hot, warm, humid, mild, cool, cold, chilly, freezing, etc. They will need to refer to this vocabulary each day as they take temperature readings on Worksheets 7, 8, 9, and 10. *Daily times for readings can be adjusted, depending on the schedule of your school day.

Extended teaching option:

- revisit activity #4 in the procedure section, using Worksheets 7, 8, 9, and 10 at a **different time of year** in order to compare the seasonal results of the sun's heat.
5. Have a discussion with students about the features of buildings that keep people sheltered and comfortable throughout daily and seasonal changes. This discussion may lead to other ideas about our “creature comforts” that keep us comfortable in different temperatures. Some sample answers may be fireplaces, air conditioners, fans, windows, pools, access to beaches, hot or cold beverages. Give students Worksheet 11 to complete individually or with a partner.

DIFFERENTIATION:

Slower learners may benefit by:

- completing only pictures in order to provide answers on Worksheet 1
- working with a peer to complete the observational notes on Worksheets 2 and 3
- working in a small group with teacher direction to ensure they obtain accurate temperature readings for Worksheets 4, 7, 8, and 9
- completing Worksheet 10 together as a small group, with teacher direction, to reduce the amount of written output required from these learners

For enrichment, faster learners could choose one day of the week from activity #4 in the procedure section, and make a bar graph to represent the temperature differences throughout the day. An option would be to have these learners create a bar graph for each of the 5 days that they took temperature readings.

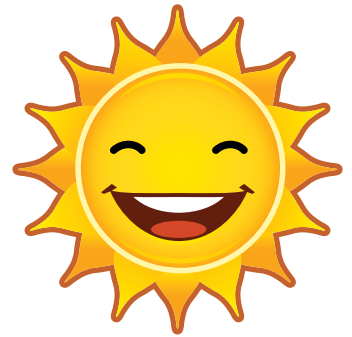


Help From the Sun

Think **Pair** **Share**

With a partner, do some thinking and sharing of ideas about the question below.

Use **pictures** and **words** when recording your ideas in the chart.



“How does the sun help us?”

My Thinking

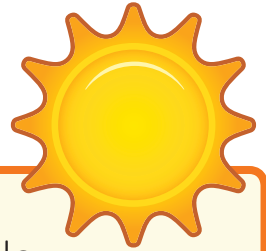
My Partner's Thinking

Feel the Heat

Take a walk in the sun on a warm sunny day.

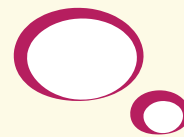
Observe how the sun feels on your skin.

Come on, let's go!



Describe how your skin feels after a few minutes in the sun.

When you stay in the sun for a long time on a **hot** day, what happens to your body?



Let's Predict

Predict how you will feel if you go into the shade.

Let's Observe

Now find a place in the shade.

Observe how your skin feels.

Describe how your skin feels after a few minutes in the shade.



Let's Conclude

What can you conclude about the heat of the sun?
