

Fourth Grade Earth, Sun, and Moon

Written By Rachael Freed



“Can you bind the chains of the Pleiades,
Or loose the cords of Orion?

“Can you lead forth a constellation in its season,
And guide the Bear with her satellites?

“Do you know the ordinances of the heavens,
Or fix their rule over the earth?

“Can you lift up your voice to the clouds,
So that an abundance of water will cover you?” (Job 38:31-34)

Goals of the British Columbia Education Plan

Our curriculum team is excited to bring you a summarized version of the new BCEd plan core goals (competencies), strategies and content. As we develop the kits we will be personalizing the content to suit your students' need and interests. Big ideas and concepts will be the focus as well as curricular threads, inquiry learning (discovering how to ask the right questions based on who, how and why things occur, as opposed to what things occur), technology integration, and collaboration. First Peoples content will include the natural history/culture of our province and encourage our God given diversity. The kits are designed to help you gain a greater understanding of the following:



Biblical Worldview:

We believe that every child in our school needs to hear the voice of God interwoven into their entire curriculum. Therefore we will be striving to make sure that this goal is an overarching strategy.



Communication Competency:

Involves imparting and exchanging information, experiences and ideas, to explore the world around them, and to understand and effectively engage in the use of digital media.



Thinking Competency:

Encompasses the knowledge, skills and processes we associate with intellectual development. It is through their competency as thinkers that students take subject-specific concepts (ideas that interest them) and content, (topics that need to be covered to increase knowledge, and transform them into a new understanding to increase knowledge), and transform them into a new understanding. This includes specific thinking skills as well as how students are allowed to learn, make mistakes and grow from failure. Encompassed in this thinking is the ability to feel safe and comfortable so that students can explore their surroundings.



Creative Thinking Competency:

Involves the ability to generate new ideas and concepts that have value to the individual or others, and then develop these ideas and concepts from thought to reality. It requires a curiosity and a wondering reflection about God's creation, with a desire to make something new and different from what they have read, seen or observed.



Critical Thinking Competency:

Encompasses a set of abilities that students use to examine their own thinking and that of others, and process information they receive through observation, experience, and various forms of communication.



Social Responsibility:

Involves the ability and disposition to consider the interdependence of people with each other and the natural environment; to contribute positively to one's family, community, society, and the environment; to resolve problems peacefully; to empathize with others and appreciate their perspectives; and to create and maintain healthy relationships.



Personal and Social Competency:

Is the set of abilities that relate to students' identity in the world, both as individuals and as members of their community and society.

Learning Strategies



In response to the goals set out by the BC Ministry of Education, HCOS has made it a priority to make use of the following learning strategies throughout our unit studies and courses.

Biblical Worldview: Biblical worldview refers to the framework of ideas and beliefs through which a Christian individual, group or culture interprets the world and interacts with it. Individuals with a biblical worldview believe their primary reason for existence is to love and serve God. A Biblical worldview is based on the infallible Word of God. When you believe the Bible is true, then you allow it to be the foundation of your life. We believe that every student at HCOS needs to develop a worldview based on their Biblical thinking and beliefs.

Inquiry-Based Learning/Mindset: Students with an inquiry mindset have a God-given curiosity; a desire to dream big, constantly challenge themselves, and a desire to research more for increased understanding and clarity. Students who actively inquire will scan their environments, generate good questions, try new approaches, observe and collect evidence, synthesize the information, draw conclusions, and generate new questions from their research.

Maker Education: The Maker Education Initiative’s mission is to create more opportunities for all young people to develop confidence, creativity, and interest in science, technology, engineering, math, art, and learning as a whole through making. This may be through STEAM – science, technology, engineering, art and mathematics. The “maker mindset” includes learning to use your imagination to make connections, use intuition, persist through difficult circumstances in learning, collaborate with other team members and community, and become disciplined learners. Maker education often involves an interdisciplinary approach, teaching science, math and art together. Here is an [example](#). To learn more go to this [page](#).

First Peoples Content: First Peoples content has been interwoven into every grade in the new BCEd plan. Aboriginal content is for all learners of all ages, and includes a healthy diversity of approaches. From learning about cultural traditions and schooling injustice, creative ways of storytelling, and good stewardship of land and resources, we can gather rich learning from the traditions of the people groups indigenous to BC. As

Christians we can draw many similarities from their holistic thinking, and share how our beliefs and traditions might be similar or different.

HCOS Subscriptions

HCOS families have access to a wide variety of wonderful subscriptions which can be used to enhance student learning. Several of these subscriptions are used throughout the unit. Each year, a document containing the usernames and passwords for each subscription is sent to families. If you have not received this document please contact your child's teacher.



Big Ideas

“Big ideas are statements that are central to one’s understanding in an area of learning. A big idea is broad and abstract.” (CT) Big ideas represent the overarching theme of each unit. They contain references to the content and key questions students will be investigating throughout the unit. Big ideas are often cross-curricular in nature. Similar themes can be found in many different subject areas within each grade-level.



Science

The motion of Earth and the moon cause observable patterns that affect living and non-living systems.

Curricular Competencies

“Competency represents the combined skills, processes, behaviours and habits of mind that learners use to make sense of the world.” (CT)



Science

- Order is a pattern that can be recognized as having levels—big to small, simple to complex—or being a process with a sequence of steps.
- Demonstrate curiosity about the natural world
- Observe objects and events in familiar contexts
- Identify questions about familiar objects and events that can be investigated scientifically
- Make predictions based on prior knowledge
- Suggest ways to plan and conduct an inquiry to find answers to their questions
- Consider ethical responsibilities when deciding how to conduct an experiment
- Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate
- Collect Simple Data

- Sort and classify data and information using drawings or provided tables
- Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends
- Compare results with predictions, suggesting possible reasons for findings
- Make simple inferences based on their results and prior knowledge
- Reflect on whether an investigation was a fair test
- Demonstrate an understanding and appreciation of evidence
- Transfer and apply learning to new situations
- Generate and introduce new or refined ideas when problem solving
- Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate

Art

- Create artistic works collaboratively and as an individual using ideas inspired by imagination, inquiry, experimentation, and purposeful play
- Develop and refine ideas, processes, and technical skills in a variety of art forms to improve the quality of artistic creations
- Connect knowledge and skills from other areas of learning in planning, creating, interpreting, and analyzing works for art

Content and Key Questions

Content refers to the topics that will be investigated throughout the unit. The key questions serve as a guide as you and your child explore the content. Throughout this unit the key questions will be the starting point for learning.



Science

Key Question: How do seasons and tides affect living and non-living things?

Key Question: What changes are caused by the movements of Earth and the moon?

Content: local changes caused by **Earth's axis, rotation, and orbit**

Elaborations: day and night: animals are nocturnal (active at night) and diurnal (active during day)

Elaborations: annual seasons: plants and animals respond to the seasons (drop leaves, change colour)

Elaborations: phases of the moon, tides, etc.

Elaborations: tides: affect living organisms

Content: the relationship between the sun and the moon

Elaborations: local Aboriginal teachings and stories about the sun and the moon

Elaborations: traditional teachings and stories about the sun and the moon

How to Use This Kit



The [Ministry of Education](#) is in the final stages of overhauling curriculum, learning strategies, and learning goals for students in the Province of British Columbia. This kit is designed with those goals in mind. On the next several pages you will discover the content that serves as the “bulk” of this kit. Rather than being divided by day, the unit plan uses the key questions detailed on page 8 to breakdown content, activities, and experiences.

Each key question will have books to read from the [HCS Overdrive E-Library](#), (if you do not have your client code & pin, please contact Shandra Wiebe at swiebe@onlineschool.ca), videos to watch, and activities to share with your child. You will not be required to complete all activities listed under each key question, instead, you will be able to choose activities which most appeal to you and your child. Each key question featured in the unit will include recommendations on how many activities to complete in order to fully address the curriculum content and competencies. Finally, each activity will have icons (shown on pages 2 and 3) showing which goals of the BCEd Plan the activity addresses.

*****You are encouraged to choose varied activities to ensure all goals are being addressed. In order to fully meet the goals of this kit, it is important to read 8 or more of the recommended books, and watch 10-14 videos.*****

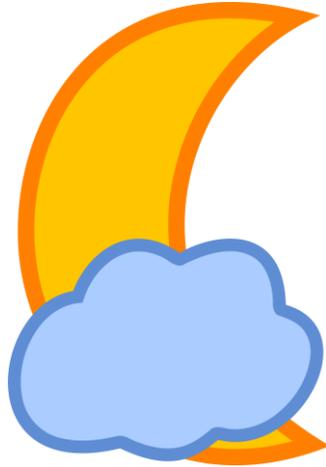
Reading and discussing/watching and discussing the books and videos listed in this unit will consistently address the following goals of the BCEd Plan:



It is our hope that our redesigned format will allow for flexibility, individual preference, and student-centered learning. When selecting activities to complete with your child we recommend selecting a variety of activities to ensure that you touch on each BCEd Plan goal throughout the unit. Most activities are designed to address multiple goals.

Unit Guide

What changes are caused by the movements of Earth and the moon?



Books to Read and Talk About: The following books are from the HCS Overdrive e-library, if the links do not open, login and type of the name of the book in the search bar

[Beneath Raven Moon](#) by David Bouchard

Things to think about: What story is told in the book? How and why is the moon created in the story? What purpose does the moon serve? Do you enjoy looking at the moon? Why? What is special about the moon? Who do you believe created the moon? When was the moon created? Why do you think the moon was created? Do other planets have moons? Which planet has the most moons? How could you find out? Why do you think people enjoy creating stories about how things were created? Why do different groups have different stories about creation? Where can you read about the story of creation in the Bible? Are there Psalms and other verses celebrating creation?

[Far-Out Guide to the Moon](#) by Mary Kay Carson

Things to think about: What have you learned about the moon? What is the moon made of? How far is the moon from earth? Does the moon have an atmosphere? Why is the moon covered in craters? How many people have walked on the moon? Why does the moon appear to change shape throughout the month? How long does it take the moon to orbit the earth? How does the moon's position impact life on earth? When did people first visit the moon? Why do you think people want to travel into space? What do they hope to learn? What do they hope to discover?

[The Sun, Stars, and Galaxies](#) by Britannica Educational Publishing

Things to think about: What is the sun? What is the sun made of? When did God create the sun? Why is the sun important? Could life on earth survive without the sun? Why is earth the perfect distance from the sun? How many other stars are there in our solar system? Galaxy? Universe? Do other galaxies have their own planets? What would happen if earth was further from the sun? Closer to the sun?

[All the Stars in the Sky](#) by C.J. Taylor

Things to think about: What story is told in the book? How and why are stars created in the story? What purpose do stars serve? Do you enjoy looking at the stars? Why? What is special about the stars? Who do you believe created the stars? When were stars created? Why do you think the stars were created? How many stars are there in the universe? Which Why do you think people enjoy creating stories about how things were created? Why do different groups have different stories about creation? Where can you read about the story of creation in the Bible? Are there Psalms and other verses celebrating creation?

Videos to Watch and Talk About:

[A Closer Look at Space: The Moon](#) (Discovery Education)

[TLC Elementary School: The Moon and Beyond](#) (Discovery Education)

[Indonesia: Total Eclipse of the Sun](#) (Discovery Education)

[Solar Eclipse](#) (Discovery Education)

[Our Home in Space](#) (Discovery Education)

[Does the Moon Make Light, or Reflect it?](#) (Learn 360)

[Learn to Sign the Words Night, Moon and Stars](#) (Learn 360)

[East of the Sun, West of the Moon: We All Have Tales](#) (Learn 360)

[Why Are There Holes on the Moon?](#) (Learn 360)

[Eclipses](#) (Learn 360)

[Sun: What's UP in Space](#) (Learn 360)

[Map Skills: Understanding Latitude, the Earth's Tilt, Direct Sunlight, and the Seasons](#)
(Learn 360)

Activities (Select 6-10):



Design an Experiment: Experiments are a wonderful way to learn more about God's creation. Scientists use a specific process when conducting an experiment known as [The Scientific Method](#). The Scientific Method must be used to achieve high-quality, accurate results. It is important not to start with a conclusion before conducting your experiment. Scientists begin with a question they would like to answer, they conduct research, and then they develop a hypothesis. This can be a long process! Watch [Using the Scientific Method](#) from Learn 360. Now, what is a question you have about matter? It is important that it is not a "yes" or "no" question, if you can answer your question with "yes" or "no," that question won't work for your experiment. Use [Popplet](#) to create a mind map. Write your BIG question in the centre of your mind map, and write your small questions around the outside. Now, use [Explora](#), [Science Power](#), and [World Book Kids](#) to conduct some research about your questions. You can use [this form](#) to organize your research. Use the information you gather to create your hypothesis (prediction about what will happen) and design your experiment. What will you do to find an answer to your question? How many times will you repeat the experiment? Where will you conduct the experiment? What materials will you need? How will you document your experiment (paper, camera, video etc.)? For the most accurate results, conduct your experiment at least twice. Have fun!



Seasonal Changes--Winter: Winter is an amazing time of year. What are some of the changes that take place during winter? How does winter impact animal behaviour? How does winter change human behaviour? How do we dress during winter? What causes winter? Watch [Winter](#) from Discovery Education. What did you learn about winter? Where is the earth located during winter? Does winter take place at the same time of year everywhere? When does winter take place in British Columbia and the rest of Canada (Northern Hemisphere)? When does winter take place in Australia and New Zealand (Southern Hemisphere)? What questions do you have about winter? How could you find the answers to your questions? Use [Explora](#), [World Book Kids](#), or [Science Power](#) to find answers. Then, create winter art. For this art project you will need dark blue paint, white paint, brown paint, a glue stick, and art paper.



Paint one sheet of paper with brown tempera paint. Dab the paper with paper towel to dry it quickly and create interesting patterns. Set it aside and let it dry some more. Next, paint a dark blue sky with tempera paint on another sheet of paper, leave a circle for the moon, and a white space to serve as a snow-covered hill. Dab it dry. Tear your brown sheet of paper into strips of varying thicknesses; attach these randomly with a glue stick to create trees. Place them in different places to create perspective. Allow some of your brown strips to peek over the top of your paper. Add snowflakes using white paint. Add shadows to your trees using watery black or brown paint--make sure that your shadows are pointing away from the trees. Allow your art to dry and then display it.



Seasonal Changes--Summer: Summer is an amazing time of year. What are some of the changes that take place during Summer? How does summer impact animal behaviour? How does summer change human behaviour? How do we dress during summer? What causes summer? Watch [Summer](#) from Discovery Education. What did you learn about summer? Where is the earth positioned during summer? Does summer take place at the same time of year everywhere in the world? When does summer take place in British Columbia and the rest of Canada (Northern Hemisphere)? When does summer take place in Australia and New Zealand (Southern Hemisphere)? What questions do you have about summer? How could you find the answers to your questions? Use [Explora](#), [World Book Kids](#), or [Science Power](#) to find answers. Then, create summer art. For this project you will need a large white canvas (often available at the dollar store), blue, green and white paint, sand coloured paint, and a darker sandy brown paint.



Begin by painting waves at the top of your canvas, mix in blues, and greens and whites, to create a turquoise sea. Underneath you ocean (or lake), paint sand, try to mix colours once again to create depth and layers. Allow your sand and water to dry. Then, have someone paint your feet with light brown paint, sit in a chair and press your feet onto the

canvas to create footprints. Lift them carefully. Do not stand your full-weight on the canvas--it will break! Allow your art to dry and then display it.



Seasonal Changes--Fall: Fall is an amazing time of year. What are some of the changes that take place during fall? How does fall impact animal behaviour? How does fall change human behaviour? How do we dress during fall? What causes fall? Watch [Fall](#) from Discovery Education. What did you learn about fall? Where is the earth positioned during fall? Does fall take place at the same time of year everywhere in the world? When does fall take place in British Columbia and the rest of Canada (Northern Hemisphere)? When does fall take place in Australia and New Zealand (Southern Hemisphere)? What questions do you have about fall? How could you find the answers to your questions? Use [Explora](#), [World Book Kids](#), or [Science Power](#) to find answers. Then, create fall art. For this project you will need a sheet of art paper, different coloured crayons, watercolour paint.



Draw a leaf shape (diagonally) that fills the paper. Use a sharpie to trace the outline of the leaf, and add veins throughout the leaf. Use your crayons to make patterns in each section of the leaf. You can make patterns outside the leaf as well if you would like. Trace the outline of the leaf with white crayons 3-4 times. Then, use liquid watercolour paints to paint over top your leaf and the rest of your paper. Use varied colours, allow them to fade into one another. Use lots of paint. Allow your artwork to dry and then display it.



Seasonal Changes--Spring: Spring is an amazing time of year. What are some of the changes that take place during spring? How does spring impact animal behaviour? How does fall change human behaviour? How do we dress during spring? What causes spring? Watch [Spring](#) from Discovery Education. What did you learn about spring? Where is the earth positioned during spring? Does spring take place at the same time of year everywhere in the world? When does spring take place in British Columbia and the rest of Canada (Northern Hemisphere)? When does spring take place in Australia and

New Zealand (Southern Hemisphere)? What questions do you have about spring? How could you find the answers to your questions? Use [Explora](#), [World Book Kids](#), or [Science Power](#) to find answers. Then, create spring art. For this project you will need four uncoated white paper plates, scissors, a stapler, and liquid watercolour paints.



Cut four different sized flowers from your paper plates. Stack them together and staple them in the centre. Paint your flower in bright colours. Use small stickers or paper cut-outs for the centre of your flower. You can see pictures of the instructions [here](#). You may wish to create several of these. Let them dry and display them.



Moon Viewing Activity: Take time over a four-five week period to view the moon. Each night that you see the moon (two or three times each week works well), take time to have your child carefully draw a picture of what it looks like, or use this [observation document](#). This is your data set. After the weeks have passed, sit down and take a look at your drawings. Discuss the following questions:

- Did the Moon change? How? Over what time? Is there a pattern?
- Was there any-point where the sky was clear, but we could not see the moon?
- Does the Moon make its own light?
- Why is the Moon bright?
- Why do think the Moon “changed shape”?

Watch [The Moon](#) from Learn 360. Then, follow the instructions on page three of [this document](#) to make the phases of the moon using Oreo cookies. Use [this visual calendar](#) to take a peek at the phases of the moon for any month 1951 until now.



Earth and Moon: Begin by watching [Moon: What's UP in Space](#) from Learn 360. What is the moon? Why is the moon called a “natural satellite?” What is an artificial satellite? What purpose do some artificial satellites serve? How does the earth move around the sun? How does the moon move around earth? Create a free Teachers-Pay-Teachers account to download this [handy model](#) showing the orbit of earth and the moon. Colour

and then construct your model to gain a deeper understanding of the movement of these bodies. Afterward, watch [Earth's Rotation and Revolution](#) from Learn 360.



First Peoples Activity: Read the story "[Spring Defeats Winter](#)" to your child. Take time to discuss the symbolism. How is winter represented? How is spring represented? Talk about how the movement of the earth around the sun causes the seasons to change. Why is spring said to "defeat" winter in the story? Why might spring be preferable to winter? What are the benefits of winter? Why do people create stories such as the one you have just read? What is a myth or a legend? How do humans use myths or legends to explain things that are difficult to understand, such as the changing seasons?



Virtual Field Trip: You may not be able to take a field trip to visit the moon, but you can explore the moon in your own home. Watch [Space Exploration: The Moon's Surface](#) from Discovery Education. Then, take a virtual [field trip to the surface of the moon using Google](#). You can look at the surface, elevation, and see where the Apollo astronauts landed during their missions.

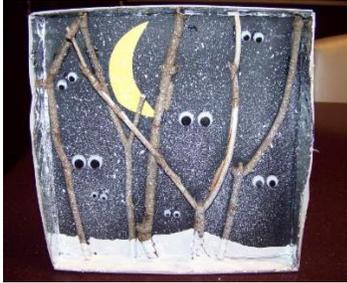


Phases of the Moon Booklet: Impress your friends by learning all about the different phases of the moon. Watch [The Moon](#) from Learn 360, then create [this booklet](#) from Scholastic. You can also play [LunarZee](#), a moon phase game based on Yahtzee--detailed instructions can be found [here](#).



Nocturnal Animals: Many animals are nocturnal. Nocturnal means that these animals are primarily awake, and hunting, at night. Watch [How Do You Know if an Animal is Nocturnal?](#) from Learn 360. Then, create owls in a box! For this activity you will need a cardboard box (shoebox size), black paint, thick white paint, white school glue, small googly eyes, yellow construction paper, and a variety of twigs/sticks. Begin by painting the interior of the box with the black paint. Let the paint dry. Then, paint a thick strip of white paint on the bottom portion of the box (see image) use flecks of white paint to

create the appearance of snow in the background of the box. Cut a crescent moon out of yellow construction paper and glue it to the back of the box. Arrange sticks in the box to create winter trees. Glue them in place. Then, organize googly eyes in pair to represent owls hiding in the night.

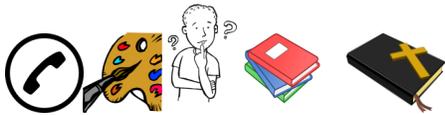


Wild Weather: What causes weather? (The Sun provides the energy that drives Earth's weather. The Sun heats the air in various parts of Earth's atmosphere by different amounts. Masses of warm and cold air then move from place to place, creating winds.) How does weather impact life on earth? How does weather change throughout each season? Are weather patterns the same all over earth? Are there some types of weather that only occur in certain parts of the world (think hurricanes)? Watch [Weather and Climate](#) from Learn 360. What did you learn about weather? What did you learn about climate? What kind of weather is most common where you live? How does the weather change based on the time of year? Use [AccuWeather](#) to keep track of the temperature (twice each day, 10AM and 5PM) for one month. Then, create a bar graph showing your results. How does the temperature change?



The Night Sky (First Peoples): Have you ever spent time outside at night? Did you enjoy looking up at the stars? Why do you think people find the night sky so interesting? What is beautiful about the night sky? What is special? How do you think ancient people saw the night sky? What would the night sky have looked like before there were electric lights? Why do you think ancient people enjoyed telling stories about the night sky? For the Inuit people of Canada, "Only 33 stars were familiar to the ancient Inuit and only six or seven of them were given names. Among them were several that were used for navigation during their travels. As for the other stars, they were grouped into 16 constellations, most of which were associated with myths in which humans and animals

played central roles.” One of the Inuit stories involves what we generally refer to as [Orion’s Belt](#). Orion’s Belt is a constellation that is often easily visible in the night sky. In Inuit legend the story of this constellation says: “Four men were hunting a bear. The bear escaped by climbing into the sky and the hunters decided to follow it. As they climbed higher and higher, one of the Inuit lost a mitten and decided to return to Earth to fetch it. The other hunters continued their hunt in the sky and we can still see them today climbing after the bear in single file.” They believe that it is the Inuit hunter who returned to earth who came to share the story. Watch [The Night Sky](#) from Learn 360. Have fun playing with the [AstroViewer](#), and then make a [Star Finder](#) from NASA.



Sun and Star Explorer: What is the sun? How far away is the sun? What is the sun made of? How does the sun impact life on earth? Could life survive without the sun? Watch [Video Quiz: The Sun](#) from Learn 360. What did you learn? How does the sun affect life on earth? The sun is 8 light minutes away from earth. That means that it takes sunlight 8 minutes to reach earth. The sunlight you see always occurred 8 minutes into the past--when you look at sunlight it is like traveling back in time. The next closest star to earth is named Proxima Centauri, it is 39,900,000,000,000 km away from earth. If you drove to Proxima Centauri traveling 100 km per hour it would take you roughly 16,625,000,000 days (approximately 46,699,438 years)--a very long time. Currently, even with space vehicles which move much faster than 100 km per hour would still take 81,000 years to travel the distance. Proxima Centauri is 4.24 light years away, that means it takes over 4 years for the light from Proxima Centauri to reach earth. If you were to look at Proxima Centauri through a telescope you would see it as it looked 4 years ago, not the way it looks today. The further away in the galaxy stars are located, the longer it takes for their light to reach earth. Some stars are so far away from earth, they may already be burned out--we would never know! The sun and stars are an amazing part of God’s creation! Read [Genesis 1-2](#); create sun and moon art!



For this project you will need white paper, crayons or pastels, pencils, and a black marker for outlining. Begin by drawing a circular shape on your paper, sketch in the lines for the sun and the moon. Colour and decorate your sun and moon using fun colours.



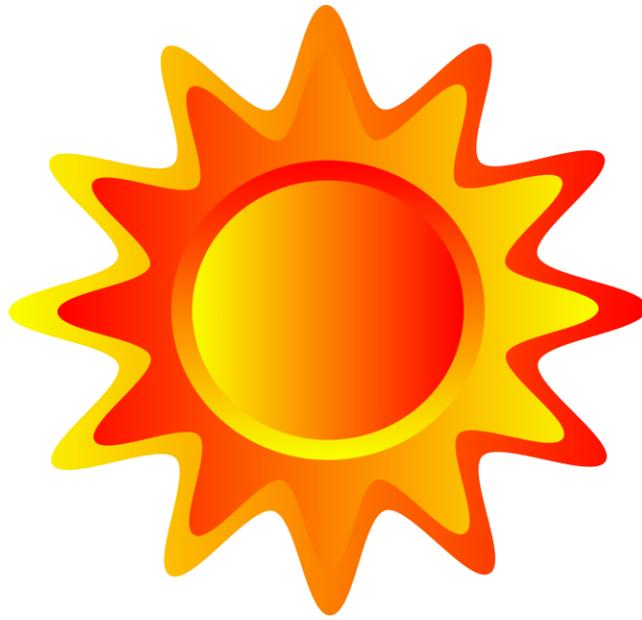
Psalms of Praise: In the Bible, there are many Psalms that speak of creation. Psalms giving credit and glory to God for the amazing universe He created. We are surrounded by beauty! Read [Psalm 104](#) and [Psalm 24](#). What sort of language do they use? What do they say about God and His works? Make a list of nature things for which you are grateful. What would you like to say to God? What are you thankful to God for? What are some of the beautiful things God created? How do these beautiful things make you feel? What do you see in creation that tells you God exists? What would you like to share with others? Remember, your Psalm doesn't have to be perfect, never be afraid to praise God!



Make a Snack with the Sun: Cook s'mores using your own [solar oven](#). For this exciting experiment you will need a pizza box, aluminum foil, plastic wrap, tape, scissors, a ruler, a paper plate, supplies for s'mores. "Cut a flap in the top of the pizza box leaving a 2" border on the sides and front. Wrap the bottom side of the flap and the interior of the pizza box with aluminum foil – shiny side out – and tape in place. Cover the opening created by the flap with plastic wrap and tape into place. Place marshmallows to be cooked on a paper plate inside the solar oven. Prop the flap open with a ruler in position to reflect the sun into the oven. Let the sun bake the marshmallows. Depending on the time of day, heat and other variables, it may take up to an hour. Be careful removing food {it will be hot!} and then add crackers and chocolate for a yummy s'more." How does this work?

According to the Museum of Science and Industry: "*The sun's light rays are collected by the foil flap and concentrated inside the box. The rays are transformed into thermal energy that slowly raises the temperature inside the box, causing the food to cook.*"

What would happen to the earth without the sun? How does sun help life on earth to survive? What would happen if we were closer to the sun? What would happen if we were further away from the sun? Which planet in our solar system is the hottest? Where is it located? Which planet in our solar system is the coldest?



How do seasons and tides affect living and non-living things?



Books to Read and Talk About: The following books are from the HCS Overdrive e-library, if the links do not open, login and type of the name of the book in the search bar):

[Earth](#) by Susan Ring

Things to think about: Read [Genesis 1-2](#). What was the process by which the earth was created? Why do you think God decided to create the earth? Why is earth special? What makes earth different from all other planets in our solar system? What is earth's orbit? How does the earth orbit the sun? How does earth's orbit impact weather and the seasons? How many days does it take for earth to orbit the sun? What would happen if earth orbited the sun more quickly? What would happen if earth orbited the sun more

slowly? Do all planets in our solar system take the same length of time to orbit the sun? Use [World Book Kids](#) to find the length each planet takes to orbit the sun. How long is a day on each of the other planets in our solar system? How long is a day on earth? What causes day and night? Why is day and night important? What happens to animals at night? What happens to humans at night? What happens to animals during the day? What happens to humans during the day? Describe trees in each season of the year, how do they change? Describe animals in each season of the year, how do they change? Describe your clothing each season of the year, how does it change?

[Seasons, Tides, and Lunar Phases](#) by Tara Haelle

Things to think about: What causes the seasons? What is fall like? Spring? Summer? Winter? What changes take place during each of these seasons? How would the world be different without the four seasons? What changes take place in the weather during these seasons? Describe trees in each season of the year, how do they change? Describe animals in each season of the year, how do they change? Describe your clothing each season of the year, how does it change? What is the tide? How does the tide impact living things, including people? Have you ever visited the ocean? How does the tide change the amount of water on the beach? Have you looked in a tidal pool? What sort of creatures did you see? What could happen if a boat was in a shallow area where the tide was going out? What are the phases of the moon? How does the moon appear different over the course of a month?

[The Boy From Earth](#) by Richard Scrimger

Things to think about: What happens in the story? Who is the boy from earth? Who are the main characters in the story? Where is the alien in the story from? What is the planet Jupiter like? Read about Jupiter on [World Book Kids](#). Are there living things on Jupiter? Why or why not? What prevents Jupiter from being a good place for life? Does Jupiter have a solid surface? How many moons does Jupiter have? How does Alan help Norbert? What are some of the struggles that Alan and Norbert face? Who is the antagonist in the story? Once you have read the book, consider leaving a helpful review on [Amazon.ca](#). A helpful book review tells other people what the book is about, what you liked about the book, anything you didn't like about the book, and who you think will enjoy the book the most.

Videos to Watch and Talk About:

[Climate](#) (Learn 360)

[The Earth](#) (Learn 360)

[The Stars](#) (Learn 360)

[Observing Weather](#) (Learn 360)

[Wild Weather](#) (Learn 360)

[Weather on the Move](#) (Learn 360)

[Weather Around Us](#) (Learn 360)

[The Nature of Weather](#) (Learn 360)

[MathMastery: Weather](#) (Learn 360)

[Drifting Desert Sands: Affecting the Weather](#) (Learn 360)

[Adaptations](#) (Learn 360)

[Nature's Power: Seasons of the Year](#) (Discovery Education)

[The Four Seasons](#) (Discovery Education)

[The Four Seasons](#) (Discovery Education)

[Frozen Planet: Ends of the Earth](#) (Discovery Education)

[Weather Smart: Weather](#) (Discovery Education)

[Weather Changes and Measurement](#) (Discovery Education)

[Earth, Sun and Moon](#) (Learn 360)

[Exploring Earth, Sun and Moon](#) (Learn 360)

[MathMastery: The Earth in Space](#) (Learn 360)

[Tides](#) (Learn 360)

[Day and Night](#) (Learn 360)

Activities (Select 6-10):



Design an Experiment: Experiments are a wonderful way to learn more about God’s creation. Scientists use a specific process when conducting an experiment known as [The Scientific Method](#). The Scientific Method must be used to achieve high-quality, accurate results. It is important not to start with a conclusion before conducting your experiment. Scientists begin with a question they would like to answer, they conduct research, and then they develop a hypothesis. This can be a long process! Watch [Using the Scientific Method](#) from Learn 360. Now, what is a question you have about matter? It is important that it is not a “yes” or “no” question, if you can answer your question with “yes” or “no,” that question won’t work for your experiment. Use [Popplet](#) to create a mind map. Write your BIG question in the centre of your mind map, and write your small questions around the outside. Now, use [Explora](#), [Science Power](#), and [World Book Kids](#) to conduct some research about your questions. You can use [this form](#) to organize your research. Use the information you gather to create your hypothesis (prediction about what will happen) and design your experiment. What will you do to find an answer to your question? How many times will you repeat the experiment? Where will you conduct the experiment? What materials will you need? How will you document your experiment (paper, camera, video etc.)? For the most accurate results, conduct your experiment at least twice. Have fun!



First Peoples Activity: Listen to the story [Why Coyote Howls: A Star Story](#) (stay tuned at the end of the story for interesting information about constellations). As your child listens to the story, encourage them to close their eyes and imagine images and scenes from the story. What do the animals use the stones to create? Have you ever seen star pictures? Have you ever heard the word constellation before? A constellation is a group of stars that appears to form a pattern or picture like Orion the Great Hunter, Leo the Lion, or Taurus the Bull. Most of the constellation names we know came from the ancient Middle Eastern, Greek, and Roman cultures. Throughout the year we see different constellations. The Earth’s orbit around the sun means that in the summer we are looking at a different part of the night sky than we are looking at in the winter. Follow the instructions [here](#) to create a constellation viewer.



Why are There Craters on the Moon? An Activity: Discover why there are craters on the moon by trying this fun experiment. You will need 4 cups of flour, $\frac{1}{2}$ cup of baby oil, small pebbles or rocks, and a round cake pan. Mix the flour and baby oil together well to make. Put the mixture into your cake pan so that it lies relatively flat. Have your child stand at different heights and drop pebbles and rocks into the pan. Take time to observe the craters they create. Discuss that the craters on the moon are created by large rocks (asteroids or meteorites) colliding with its surface. Earth has an atmosphere that protects it from most asteroids and meteorites; it causes them to burn up before they hit us. The moon does not have an atmosphere.



Make it Rain Experiment: Read the story of Noah's ark from [Genesis 6](#). Talk about what all that rain would have looked like, felt like, smelled like etc. What does your child know about rain? Make Rain! You will need a saucepan, water, ice cubes, oven mitts, and an adult. Begin by boiling water in a saucepan. Then, use oven mitts to protect your hands, hold a tray of ice above the steam. Drops will begin to fall like rain from the tray! Why did this happen? (The cold surface of the ice cube tray cools the steam from the boiling water, changing it back in liquid form. Rain!) Why is rain important for life on earth? What are the benefits of rain? What happens if there is not enough rain? Which season gets the most rain? Which part of the world gets the most rainfall? How could you find out? ([Explora](#) or [World Book Kids](#)). Which part of British Columbia gets the most rainfall? Which part of Canada? Make a [rain gauge following the instructions from Education.com](#).



Leaf Art: Leaves change throughout the year. Describe leaves in each of the four seasons. How do they change? What happens to the leaves in the fall? Take a nature walk to collect leaves. Look for interesting leaves of all different shapes and sizes. When you return home, arrange leaves on sheets of craft paper to create animals.





Tidal Pool Demonstration: Begin by watching [The Tides](#) and [How the Moon Affects the Earth](#), both from Learn 360. What is tide? What causes the tides? How do the tides affect people? How do the tides affect animals? What changes can you observe during high tide? What changes can you observe during low tide? Are there benefits to high tide and low tide? Create a tide pool demonstration! For this project you will need a dish pan, a plastic bin, or an aluminum lasagna pan, lots of rocks and stones (varying sizes), toy sea creatures, sand, and water. Fill your pan with rocks and sand. Try to create varying levels to create a tide pool. Place your mini animals in the tide pool--you may also want to put a boat in the water to see how long it takes to float. Consider which animals will be underwater in your tide pool first. Would the tides be different if we didn't have a moon? If the moon was located in a different place? If we had more than one moon? Add water slowly one cup at a time. Continue adding water until you reach high tide. All of the animals will be underwater during high tide. Slowly drop the water back down to low tide. Which animals are uncovered first? Consider creating waves in your tide pool. If you live near the beach, go on a tide pool scavenger hunt.



Make a Sundial: One of the earliest ways to tell time was using a sundial. A sundial is an instrument showing the time by the shadow of a pointer cast by the sun onto a plate marked with the hours of the day. Making a sundial is simple, all you need is a paper plate, [this clock face](#), and a pencil (a compass is also helpful). Paint the back of your paper plate. Cut the clock face out and glue it to the back of the paper plate. Use a nail to punch a hole in the centre of the plate/clock face, stick a pencil through the hole. Then, take your sundial outdoors. Use your compass or cellphone with a compass device, to find north. The number 12 on your clock should be facing north. Watch the shadow of the pencil change throughout the day.



24 Hours on Earth (Night): Watch [24 Hours Night on Earth](#) from Learn 360. What happens during the night? How do animals behave once dusk falls? Which animals are active at night? How can you tell whether an animal is nocturnal? How do scientists observe nocturnal animals? How do humans behave at night? What would life have been like before we had electric lights? What else did you learn in the video? What questions do you still have? After viewing, you are going to select a nocturnal animal that is of interest to you. Once you have selected your animal, conduct research using

[Explora](#) and [World Book Kids](#), Use [this template](#) to organize your research. You can present the information you gather in a variety of ways including a poster, a video presentation, or an [Edubuncee](#). The following questions are suggested as a place to begin. Try to come up with as many of your own questions to answer as you possibly can:

- Where does your animal live?
- What is its home like?
- What is the environment of the ecosystem in which it lives like?
- How does it survive in its environment?
- What special features did God give this animal to help it survive in its environment?
- Where on earth does it live?
- How does this animal adapt to the changing seasons?
- What is the animal's food chain?
- How does this animal interact with other living things in its environment?
- Is this animal endangered? How can people help to protect this animal?



24 Hours on Earth (Day): Watch [24 Hours on Earth: Day](#) from Learn 360. What happens during the day? How do animals behave during the day? Which animals are active at day? Do you think it would be easier to be a nocturnal or diurnal animal? Why? What else did you learn in the video? What questions do you still have? After viewing, you are going to select a diurnal animal that is of interest to you. Once you have selected your animal, conduct research using [Explora](#) and [World Book Kids](#), Use [this template](#) to organize your research. You can present the information you gather in a variety of ways including a poster, a video presentation, or an [Edubuncee](#). The following questions are suggested as a place to begin. Try to come up with as many of your own questions to answer as you possibly can:

- Where does your animal live?
- What is its home like?
- What is the environment of the ecosystem in which it lives like?
- How does it survive in its environment?
- What special features did God give this animal to help it survive in its environment?
- Where on earth does it live?
- How does this animal adapt to the changing seasons?
- What is the animal's food chain?
- How does this animal interact with other living things in its environment?

- Is this animal endangered? How can people help to protect this animal?



First Peoples Moon Stories: After reading [Beneath Raven Moon](#) by David Bouchard, watch [Why the Sun and Moon Live in the Sky A Nigerian Folktale](#) from Discovery Education, you can also read [Genesis 1-2](#). How are these stories similar? How are they different? Why do you think the moon plays an important role in so many different cultures around the world? What is one of the first things you notice at night? How do the phases of the moon change how you see the moon? Do you enjoy looking at the moon? What details can you see when you look at the moon with your bare eyes? Why do you think people created stories to explain the origin of the moon?

Create a moon mobile. For this project you will need yellow paint, white paint, flour, thin cardboard, scissors, paintbrushes, double-sided tape, a glue gun, fishing line, needles, and a Styrofoam ball. Use the ends of paintbrushes to create “craters” in your styrofoam ball. Use different sizes of paintbrushes to create different sizes of craters. Next, mix two parts flour to one part white paint. Prop your moon in a yogurt container (or something similar), and paint your moon.

Cover it as fully as possible. Let it dry. As your moon is drying. Paint small sheets of thin cardboard with a yellow paint. Once they have dried, cut-out star shapes--these will hang beneath your moon. Cut fishing line to varying lengths; attach your stars using tape. Tie a needle to the top of each line. Press your needles into the bottom of your moon and secure them using hot glue. Hang your mobile in your bedroom. To see pictures of the project visit [here](#).



Changing Seasons: Why do the seasons change? How would the world be different if we didn't have seasons? Would the seasons be different if the world wasn't tilted at a slight angle? How would seasons be different if the earth moved more slowly around the sun? How would the seasons be different if the earth moved more quickly around the sun? Watch [The Reasons for the Seasons](#) from Discovery Education. How does animal behaviour change throughout the seasons? How do animals adjust when the weather gets very hot or very cold? How do humans adjust? Watch [Animal Behaviour](#) from Learn 360.



Blubber Glove Experiment: Conduct the [Blubber Glove Experiment](#) from Steve Spangler Science! You will need two large zip-loc bags, shortening, spoon, duct tape, water, ice cubes, and a bucket. This amazing experiment illustrates the features God gave arctic/ocean animals to help them survive in freezing cold temperatures. Why do you think God created so many different kinds of animals? What other special features do animals that live in very cold climates have? How do humans adjust to cold climates?



Hibernating Bear Experiment: Watch [Migration and Hibernation](#) from Learn 360. What is migration? What are some animals that migrate? What is hibernation? What are some animals that hibernate? What must animals do in order to prepare themselves for hibernation? Why is hibernation a benefit to some animals? Hibernating bear vs. awake bear. You will need 2 empty jars with lids, and butter at room temperature. Label one jar “hibernating bear” and the other jar “awake bear.” Place a good dollop of butter in each jar. Explain to your child that the butter represents all of the food the bear ate before winter and the energy he is storing. Now, take turns shaking the awake bear jar (aggressively if need be). The butter will splatter and smear all around the jar. Explain that bears use their fat stores all winter long to help them survive the cold winter when very little food is available. If a bear was to be awake and running around during the winter, it would use up all of its fat stores and energy.



Moon Stories: Listen to stories about the moon from different cultures around the world including [Mexico](#), [Ivory Coast](#), [Algeria](#), [China](#), and [North America](#). After you have listened to one or more of the moon stories. Why do you think different cultures all have stories about the moon? What is special about the moon? How visible is the moon at night? How much brighter is the moon when you are in a very dark place? Why do you think people enjoy looking at the night sky? Encourage your child to write and illustrate their own story about the moon. You may wish to try using the [Storybird](#) application.



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