



Date: _____

Lessons from the Night Sky

ACKNOWLEDGEMENT

Please read this Acknowledgement before the start of this lesson to respect the knowledge that is being shared and the Land of the People where the knowledge originates.:

The original signatories for The Articles of Treaty 7 include the Blackfoot, Blood, Peigan, Sarcee, and Stoney Nations as well as Her Majesty the Queen of England on behalf of Canada. Treaty 7, signed on September 22, 1877 describes the expansive lands exchanged for benefits promised in perpetuity to the descendants of the signatories, which include health care, schools, and reserved land. The Treaty is a living document, all people living in Treaty 7 territory are treaty members bound with mutual responsibilities to support peaceful co-existence.

LEARNING OUTCOMES

Upon successful completion of this lesson plan, students will be able to:

1. Identify different ideas about the nature of Earth and space based on culture and science (e.g., compare geocentric and heliocentric models) [Note: knowledge of epicycles is not required.]
2. Describe Indigenous Peoples' views of space (earth, moon, sun, and sky) and those of other cultures.
3. Connect Self, Text, and Culture – Discuss own and others' understandings of various community and cultural traditions in various places and times as portrayed in oral, literary, and media texts.
4. Appreciate that scientific understanding evolves from the interaction of ideas involving people with different views and backgrounds (e.g., show an interest in the contributions that women and men from many cultural backgrounds have made to the development of modern science and technology).

LIST OF ACTIVITIES

1. 'Flipped Learning' prior to classes: Look at the night sky
2. Opening Discussion
3. Connect - Extend - Challenge
4. Western Science and Indigenous Views of the Sun, Moon and Earth
5. Similarities and Differences in Western and Cree Views
6. Thirteen Moons: Lunar and Solar Calendars
7. Naming our 13 Moons

MATERIALS

- Supplies: Student Journals
- Homework from the night before - Written Reflections
- Supplies: Student Journals
- Tipiskawi Kisik: Night Sky Star Stories Book Launch with Wilfred Buck
- Worksheet: Connect-Extend-Challenge



Science

Origin

Charles Spencer High School
Grande Prairie
Alberta

Learning Level / Grade

9

Also: 6, 7, 8, Professional
Development/Continuing
Education



370 mins

Related Subjects

Literacy and Literature, Social
Studies, Indigenous Ways of
Knowing & Being

- **Supplies:** Student Journals
- **Book:** "Thirteen Moons on a Turtle's Back" by Jonathan London and Joseph Bruchac
- **Website:** What is the Difference Between the Lunar Calendar & the Solar Calendar?
- **A Series of Lesson Plans:** "Tthën (Dëne) Acâhkosak (Cree) The Night Sky" by Shaun Nagy

DESCRIPTION

The purpose of this series of 7 lesson activities is to enrich students' understanding and to gain appreciation of Indigenous Science and Western Science in astronomy. Students will experience practices in thinking about Indigenous ways of knowing and western culture. Students will feel more comfortable using ideas that they may not believe themselves. When teachers integrate aspects of Indigenous perspectives into the different subject areas, it not only teaches students about Indigenous Peoples but it also helps to engage students, especially those who are Indigenous. It is important for teachers to use topics and resources that are relevant to students and that will help them discover who they are as individuals.

These seven lesson activities are intended to be taught over 'multiple lessons' and can be divided depending on your class time limits.

HOLISM AND ALL OUR RELATIONS

This lesson plan has been developed with an Indigenous lens that is holistic in nature, a way of being and knowing that acknowledges our relationships with 'all our relations', including plants and animals, other human beings, the water, land, wind, sun, moon, stars, and more - everything seen and unseen. With 'all our relations' in mind, this lesson plan has been developed with a focus on:

- Language and Culture
- Participatory and experiential learning activities
- Intergenerational learning with Elders/Knowledge Holders
- Different learning styles; attention given to mind, body, and spirit
- Connections are made with everyday life
- Ethics in the classroom: care, truthfulness and trust, respect, integrity
- Relationship with the land
- Personal reflection time (connecting with thoughts and feelings)

TEACHERS' GUIDE

Background/Foundational Information

- These 'multiple lessons' provide teachable moments that allow students to learn the idea that concepts in science and technology emerge from all people. Western science emerged from as Euro-American culture whereas Indigenous science emerged from Indigenous Peoples. Many different aspects of the night sky have played a very important role in the daily lives of many different Indigenous groups. The night sky is relatively predictable from year to year and for this reason, different celestial objects have been used during travel, to predict weather, and to describe events that occur each year. Much of this has been passed along through stories from generation to generation

We focused our lessons based on the First Nations on Treaty 8 territory. Mainly discussed Cree and Dene as recommended by our First Nation liaison Fran Rogers.

Know the Gregorian Calendar (Solar) and Indigenous (Lunar)

Indigenous calendars are lunar calendars that are logical in a culture in which people are acute observers of nature. An Indigenous calendar does not need to be precise, just good enough to reasonable communication.

There are 13 full moons in each year. Indigenous calendars are 13-MOON calendars, not 13-month Calendars. When we use the word month we are speaking from a western cultural point of view. When we use the word moon, this indicates an Indigenous point of view. If we use a 12 moon calendar for Indigenous Peoples, we unwittingly engage in subtle assimilation. Our cross-cultural science and technology try to avoid the assimilation of 12 moon and 12 month calendar. Indigenous Peoples and communities will have variations on the names and spelling for each moon. We looked at the Cree and Dene since being located on Treaty 8 Territory.

Today in our highly technological culture, it seems logical to adjust our Gregorian calendar to correspond to the solar cycle, using the greatest precision our technological instruments can measure. This need for precision signifies how far removed from the earth we have become by not using the 13-moon calendar.

Throughout history, calendars have been invented by paying attention to either the moon or the sun. A lunar cycle is not a simple concept because its duration is relative to the frame of reference one chooses. A solar cycle is the time between one vernal equinox and the next (365.2422 days). Our notion of time is determined by our enculturation into our community. People who lived close to nature, relying on their knowledge of nature to survive as people, looked to the cyclic appearance of the Moon 13 times a year to orient themselves when natural events would generally happen or when religious events were to happen. 13 moons organized their seasonal tasks in a logical way.

For Lesson Three (a bit of the background).

According to the teachings of the Anishinabe People of central North America, the first of all the mothers, Nokomis or **Grandmother Moon**, dwells in the heavens near her daughter, **Mother Earth**. From there, Nokomis keeps watch over her children, gently leading them through the night. Mother Earth nourishes and cares for all her children in the plant, animal, and human worlds. Just as life comes from Mother Earth, it returns to her, completing the circle of life. Each day, **Grandfather Sun**, the "one who brings morning", gives light and warmth to his children. Together, Mother Earth and Grandfather Sun provide the gift of life to all. The heartbeat of Mother Earth is echoed in the drumbeat of the Anishinabe. Even Wolf, who sings to the Moon, bids us not to forget our beginnings with Nokomis, our Grandmother. (From: <http://www.virtualmuseum.ca/edu/ViewLoitDa.do?method=preview&lang=EN&id=5188>)

ACTIVITIES

1 - 'Flipped Learning' prior to classes: Look at the night sky

Purpose

This is a provocation activity to set up students' thinking for class discussions. It is also a personal reflection where students can think about what the night sky means to them.

Time: 15 mins

Activity Instructions

The day before you plan on holding the second Activity, "Opening Discussion," have students go home and see if they can see any constellations in the sky in the evening. Have them write down what they see and their interpretation of what it means.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners
- Emotional (e.g., Feeling, Intuitive) Learners

... in the following ways:

As students look at the night sky and write down their observations and interpretations this will directly link to what they are thinking, feeling and what they believe in spiritually. These connections will be different for each student.

Materials

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
Supplies: Student Journals	Supplies 📋
These can be actual journals or pieces of paper stapled together.	

TEACHING NOTES

2 - Opening Discussion

Purpose

Students will share their homework from the previous activity with the class. They will also connect the new learning to prior experiences or understanding.

Time: 15 mins

Activity Instructions

Discussion Questions: What stories do you know about the night sky? Think about stories you have heard about stars/constellations.

Have students share with the class or complete a journal entry on their thoughts.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners
- Emotional (e.g., Feeling, Intuitive) Learners

... in the following ways:

As students are sharing their work outlining their observations and interpretations, they will share their experiences related to feelings, beliefs and logic. Students will learn about one another and connect to the similarities and differences among them.

Materials

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
Homework from the night before - Written Reflections	Supplies 📄
Students' reflections will be the basis for the 'Opening Discussion.'	
Supplies: Student Journals	Supplies 📄
These can be actual journals or pieces of paper stapled together.	

TEACHING NOTES

3 - Connect - Extend - Challenge

Purpose

Students watch information and identify their thoughts, feelings and questions in relation to what they are watching. This makes the watching and listening a more active process

Students will:

- To gain knowledge of both Indigenous and western Science concepts about the night sky.
- Understand that cultural astronomy is the study of humans and their relationship with the sky
- Students will acquire Indigenous knowledge of events seen in the sky
- Connect Self, Text, and Culture – Discuss own and others' understanding of various community and cultural traditions in various places and times as portrayed in oral, literary, and media texts.

Time: 65 mins

Activity Instructions

Students will watch a number of videos and fill out a "Connect - Extend - Challenge" activity (see the sample handout in the 'Materials' section):

- **Connect:** What things stood out for you? (something you may not have known)
- **Extend:** What did it make you think about? (did something trigger another story you may have heard)
- **Challenge:** What questions do you have now? (what are you curious about)

The primary video is "Tipiskawi Kisik: Night Sky Star Stories Book Launch with Wilfred Buck" (see 'Materials' section). Other videos and resources are available in the section, "Where Can I Go for Additional Information?"

After they complete watching the videos and write down their thoughts, students will have a group discussion guided and supported by the Science Teacher and the school's Indigenous Cultural Support Liason (or a Knowledge Holder from an Indigenous community in your area - urban or rural).

Additional Background Information for this Activity

Educators need to have watched the videos themselves in order to support the discussion. Also, having Indigenous Knowledge Holders present is important in order to answer questions and guide the conversations.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners
- Emotional (e.g., Feeling, Intuitive) Learners

... in the following ways:

As the activity invites students to connect and extend their thinking, this will lead students to discuss the emotional, intellectual and spiritual ideas being discussed in the videos and how they connect to what they know and what they personally think and feel.


Suggested Adaptations for Different Kinds of Learners

It is important for educators involved in the discussion to draw out students' thoughts and ask follow up questions to create a meaningful conversation where students truly challenge their misconceptions of Indigenous ways of knowing and connect what they are learning to what their own families think and feel.

Materials

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
Tipiskawi Kisik: Night Sky Star Stories Book Launch with Wilfred Buck	Youtube
<p>This video, "Tipiskawi Kisik: Night Sky Star Stories," is with the author, Wilfred Buck, who shares his culture's views of the night sky and the importance of the stars for his People. He also talks about the importance of respecting Indigenous ways of being and knowing.</p> <p>In addition to this video, there are several other videos and an audio recording to explore:</p> <ul style="list-style-type: none"> • Cultural Impacts of Astronomy: Astronomy of Indigenous Australia https://www.youtube.com/watch?v=p5ZcxYTtHSo • Fro Starwars to Stargazing https://www.cbc.ca/radio/unreserved/from-star-wars-to-stargazing-1.3402216/cree-mythology-written-in-the-stars-1.3402227 • Wilfred Buck Tells the Story of Star Woman https://soundcloud.com/scifri/wilfred-buck-tells-the-story-of-star-woman • A Virtual Museum (provides extra information for this activity) http://www.virtualmuseum.ca/edu/ViewLoitDa.do?method=preview&lang=EN&id=5188 	
Worksheet: Connect-Extend-Challenge	File (ConnectExtendChallenge_worksheet.docx) 
<p>This handout was adapted by Alice Vigors (2017). Please feel free to adapt it for your students/class.</p>	

TEACHING NOTES

4 - Western Science and Indigenous Views of the Sun, Moon and Earth

Purpose

Students will make connections between what they know about the western science perspective and what they are learning about Cree views of the sun, moon and earth.

Students will:

- Appreciate the wealth of knowledge held by elders of different cultures
- Students will acquire Indigenous knowledge of events seen in the sky

Time: 50 mins

Activity Instructions

First, students discuss in groups what the “Western” view of the sun, moon, sky, earth are. Make a list of how students view the sun, moon, sky, Earth. How do we see a relationship? What are their roles?

Invite a local Elder or Knowledge Holder to come (following appropriate cultural protocols) and share their stories on the relationships between the sun, moon, Earth, and sky. The Elder or Knowledge Holder can talk about what it means in their culture (Cree) and why they are considered Grandmother Moon, Grandfather Sun, Mother Earth, and Father Sky.

Students can listen and ask questions.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners

... in the following ways:

Students experience having an Elder as a guest in their classroom and should be deeply respectful. The Elder will share spiritual and intellectual views from his or her culture. Encourage students to engage and ask questions to clarify their thinking and deepen their understanding of perspective.

Suggested Adaptations for Different Kinds of Learners

Students could be asked to reflect on the meeting with the Elder and identify how this experience has made them feel. The logical thinking related to this activity will take place in the following activity listed.

TEACHING NOTES

5 - Similarities and Differences in Western and Cree Views

Purpose

For students to compare and contrast the Western and Cree views of the Sun, Moon and Earth.

Students will be able to:

- explain the roles of balance between relationships of celestial bodies (sun, moon, earth, sky)
- demonstrate an understanding of the importance of oral tradition in Indigenous communities.
- demonstrate awareness of the special significance of celestial objects for Indigenous Peoples of North America.

Time: 30 mins

Activity Instructions

Using what was learned and discussed in the previous Activity with the Elder or Knowledge Holder, have students make a list on the board about Indigenous Views of the Earth, Moon, Sun, and Sky and compare and contrast the two lists. They will write down their ideas in a T-chart (draw a big 'T' either on the board and/or in their journals/on sheets of paper) with "Western Views" and "Indigenous Views" as the titles. Do they notice any similarities? Any differences? Have students describe in a journal entry what they notice as well as three purposes of Indigenous stories that relate to celestial bodies.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners
- Emotional (e.g., Feeling, Intuitive) Learners


... in the following ways:

Students will take what they learned in the previous activity and make comparisons to the information they have for the western science perspective on the Sun, Moon and Earth. This activity includes writing and discussion in small groups. Students will continue to connect with the sky as they work through this rational-focused activity. The follow-on work of science journaling allows students to make personal and cultural connections which leads to spiritual and emotional thinking.

Materials

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
Supplies: Student Journals	Supplies 

TEACHING NOTES

6 - Thirteen Moons: Lunar and Solar Calendars

Purpose

Students will be able to:

- demonstrate awareness of Indigenous practices associated with the seasonal cycles.
- demonstrate awareness of the special significance of celestial objects for the Indigenous Peoples of North America.
- demonstrate awareness that Indigenous stories often have specific teachings or purposes.
- demonstrate awareness that Indigenous stories express the uniqueness of each First Nation community.
- understand that cultural astronomy is the study of humans and their relationship with the sky.

Time: 40 mins

Activity Instructions

Put this quote on the board and have students think about it:

"There are always thirteen marks on an Old Turtle's back and there are always thirteen moons in each year. Many people do not know, as we Abenaki know, that each moon has its own name and every moon has its own story." (source: "Thirteen Moons on a Turtle's Back," page 1).

Read "Thirteen Moons on a Turtle's Back" to the class and have them think about the stories/poems that relate to each moon.

Using the book, compare and contrast the lunar calendar with the solar calendar (Gregorian). This website has useful information for this activity:

<https://sciencing.com/difference-between-lunar-calendar-solar-calendar-22648.html>.

Additional Background Information for this Activity

In this book, "Thirteen Moons on Turtles' Back: A Native American year of moons", Joseph Bruchac and Jonathan Landon have told the stories of one moon from each of thirteen different groups of Native Americans. These moons include Moon of Popping Trees (Northern Cheyenne), Baby Bear Moon (Potawatomi), Maple Sugar Moon (Anishinabe), Frog Moon (Cree), Budding Moon (Huron), Strawberry Moon (Seneca), Moon When Acorns Appear (Pomo), Moon of Wild Rice (Menominee), Moose-Calling Moon (Micmac), Moon of Falling Leaves (Cherokee), Moon When Deer Drop Their Horns (Winnebago), Moon When Wolves Run Together (Lakota Sioux), and Big Moon (Abenaki). Each different moon has its own poetic story to go along with it that describes why they have named that specific moon.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners

... in the following ways:

Reading the book is tactile and experiential for all students. Additionally, having an Indigenous Knowledge Holder in the classroom would help build the spiritual learning as this person can connect the stories to the moon, sun and Earth with cultural relevance. As students compare their Western Science understanding of the moon to what they are learning in the story, they will employ their intellectual thinking.

Suggested Adaptations for Different Kinds of Learners

Encourage students to reflect on how hits learning is different from what is typically taught in the curriculum. How does this connect to your family's views? Should all families views be the same? How do we find that balance between different cultural ways of knowing?

Materials

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
Book: "Thirteen Moons on a Turtle's Back" by Jonathan London and Joseph Bruchac	Supplies 📖
Check your school library or the public library for this book.	
Website: What is the Difference Between the Lunar Calendar & the Solar Calendar?	Link 🔗
This webpage has a lot of helpful informatio for the compare and contrast discussion.	

TEACHING NOTES

7 - Naming our 13 Moons

Purpose

Students will connect with the phases of the moon on a personal level. They will be able to:

- Appreciate that the circle of life extends beyond Earth;
- Explain the roles of balance between relationships of celestial bodies (sun, moon, earth, sky);
- Understand that cultural astronomy is the study of humans and their relationship with the sky.

Time: 40 mins

Activity Instructions

Students will need to research when each full moon is throughout the year to be able to accurately name their 13 moons. Have them compare how the moons correspond with our 12 month calendar.

Students will brainstorm ideas to name their own thirteen moons based on events that they feel are important during that time of the year (eg. if hockey is important in November, the moon can be named "Moon when hockey begins"). Three to four of the moons ought to relate to a science concept covered (e.g., an eclipse, etc.).

Students can use the Cree Lunar Calendar for ideas and to help guide the names they choose (see Appendix A in the attached resource in the 'Materials' section).

Note (for the Activity and for Assessment purposes): The aim is for students to connect with what they feel is important to them when creating their own calendar of 13 moons. Give students a chance to be creative and really think about what is significant to them as well as relate it to the sciences (e.g., figuring out when an eclipse would occur during their lunar calendar). Try and come up with significant "sky" events that happen during the current calendar year to help with naming of their moons.

This activity is designed to connect with learners with these learning styles...

- Spiritual (e.g., Relational) Learners
- Physical (e.g., Tactile, Experiential, Visual) Learners
- Intellectual (e.g., Rational, Logical) Learners
- Emotional (e.g., Feeling, Intuitive) Learners


... in the following ways:

Students will link the names of the moons to factual and personal information for each lunar cycle. This will allow different kinds of learners to access the ideas in their own ways.

Materials

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
A Series of Lesson Plans: "Tthën (Dëne) Acâhkosak (Cree) The Night Sky" by Shaun Nagy	Link 
<p>See Appendix A for 'Moons of the Cree Year' and 'Moons of the Dene Year.' Select one (or both) to share with the class for this Activity.</p> <p>For ideas of other science and technology lessons for your students, explore the thirteen lessons in this document, which is part of the series, "Rekindling Traditions: Cross-Cultural Science and Technology Units."</p>	

TEACHING NOTES

ASSESSMENT

This section contains information for assessing progress in students' learning. While Indigenous approaches to assessment may be highlighted, conventional assessment methods may also be discussed.







The assessment of this lesson is designed with Indigenous ways of assessment in mind. On this webpage, read through 'Holism and All Our Relations' (this section is in the top right). Take note of the journaling questions when you click to 'see more' for: 'Healthy relationship with self and identity' and 'Personal Reflection Time.' Journaling assignments in the Activities, as well as the 'Connect-Extend-Challenge' worksheet can also contribute to assessment of learning.






Additionally, an Indigenous approach to assessment could be a personal reflection of what the perspectives of Elders mean to you and your own beliefs. This lesson was created with a mixed class of Indigenous and non-Indigenous students, so another way to assess learning would be to ask students to truly reflect how this learning has impacted their perspectives of western and First Nations, Cree and Dene, cultures. Finally, discussions on how this learning has connected individuals to the sun, moon and Earth would be another way to assess understanding using Indigenous ways of assessment. These could be oral or written reflections.

ADDITIONAL RESOURCES

Click the 'Link' to open and view videos.

To open and print files, please go to the 'files' folder accompanying this downloaded lesson plan.

Resource Title	Type
Tipiskawi Kisik: Night Sky Star Stories Book Launch with Wilfred Buck	Link 
This video is based on Wilfred Buck's book, "Tipiskawi Kisik: Night Sky Star Stories," where he shares the importance of the stars in his culture. He shares his culture's view of the night sky. He also talks about the importance of respecting Indigenous ways of being and knowing.	
Cultural Impacts of Astronomy: Astronomy of Indigenous Australia	Link 
From YouTube: Each of the 400 different Aboriginal cultures in Australia has a distinct mythology, ceremonies, and art forms, some of which have a strong astronomical component. Many share common traditions such as the "emu in the sky" constellation of dark clouds, and stories about the Sun, Moon, Orion, and Pleiades. Several use the rising and setting of particular stars to indicate the time to harvest a food source, and some link the Sun and Moon to tides, and even explain eclipses as a conjunction of the Sun and Moon. These traditions reveal a depth and complexity of Aboriginal cultures which are not widely appreciated by outsiders. This presentation will explore the wonderful mystical Aboriginal astronomical stories and traditions, and the way in which these are used for practical applications such as navigation and harvesting. It also describes the journey of exploration, which is opening Western eyes to this treasury of ancient Aboriginal knowledge.	
From Starwars to Stargazing	Link 
Radio clip: Wilfred Buck, who is from Opaskwayak Cree Nation, doesn't teach them about Orion or the North Star. Instead, he tells them about Wesakaychak and Keewatin: the Cree constellation	
Wilfred Buck Tells The Story of Star Woman	Link 
Audio recording: Wilfred Buck telling the story of Star Woman	
Thirteen Moons on Turtle's Back: A Native America Year of Moons	Offline 
From Amazon: In Native American legend, the thirteen scales on Old Turtle's back hold the key to the thirteen cycles of the moon and the changing seasons. These lyrical poems and striking paintings celebrate the wonder of the seasons, from the Northern Cheyenne's Moon of the Popping Trees to the Big Moon of the Abenaki.	
Tthēn (Dēne) Acāhkosak (Cree) The Night Sky by Shaun Nagy	Link 

Resource Title	Type
This lesson was created as part of a series of Indigenous lessons, The Night Sky, Rekindling Traditions: Cross Cultural Science and Technology Units, edited by Gene Aikenhead. This particular lesson is from LaLoche, Saskatchewan.	
Indigenous Astronomy: The Anishinabe of Central North America	Link 
This was used as background information for this lesson and is included in the background section.	
Earth Science - The Sun and the Earth, Moon System	Link 
This article is a high-level summary of the movements of the Earth, Moon, and Sun affect different phenomena on Earth, including day and night, the seasons, tides, and phases of the Moon	
introduction to the moon phases	Link 
This is a video illustrating the moon's phases	
NCBI article	Link 
Western science and traditional knowledge: Despite their variations, different forms of knowledge can learn from each other	
What is Indigenous Knowledge in science?	Link 
What is Indigenous Knowledge? Indigenous Knowledge has become the accepted term to include the beliefs and understandings of non-western people acquired through long-term association with a place.	

HOLISM AND ALL OUR RELATIONS

This lesson plan has been developed with an Indigenous lens that is holistic in nature, a way of being and knowing that acknowledges our relationships with 'all our relations', including plants and animals, other human beings, the water, land, wind, sun, moon, stars, and more - everything seen and unseen. With 'all our relations' in mind, this lesson plan has been developed with a focus on:

Relationship with the land
In this lesson, we take the notion of "relationship with the land" to the sky. Students will be exploring the sky, looking at the sun and the moon and connecting these to the beliefs to their own cultural beliefs. Students will gain a respect for the sky and what it means to their cultures.
Participatory and experiential learning activities
Language and Culture
Students will learn the names for different elements of the sky in Cree through the videos and meeting with Elders and other Indigenous Knowledge Holders. These names can also be incorporated into the final activity of naming their own moon phases
Connections are made with everyday life
As these lessons focus on the sky, the application to daily life is esoteric (yet, understanding how Indigenous Peoples mark time by the moons and, pre-contact, how they prepared for survival based on the moons reveals how the moon was and still can be connected with everyday life). On another note, students in this community, as in many communities, work and play with people from a wide variety of cultures, Indigenous and non-Indigenous. Taking time to appreciate the value of local perspective builds respect for Indigenous Peoples in the area. Hopefully, deepening this understanding will spill into everyday interactions with people in their communities.
Intergenerational learning with Elders/Knowledge Holders
Were Elders or Knowledge Holders involved in the development of this Lesson Plan? Yes Can Elders or Knowledge Holders be invited to help teach part of this lesson plan? Yes

Intergenerational learning with Elders/Knowledge Holders**Ethics in the classroom: care, truthfulness and trust, respect, integrity**

These lessons are all about demonstrating awareness and respect of the valuable Indigenous perspectives on the sun, moon, sky and Earth. It encourages a respect for cultural astronomy and how cultural astronomy can help us build our own understanding of these concepts. As people learn more about cultures, they tend to gain more respect for different people in their communities.

Different learning styles; attention given to mind, body, and spirit**Healthy relationship with self and identity**

For First Nations, Inuit and Métis students, think about how sharing this information with their classmates has made them feel. Has it changed the way they feel about their ways of knowing and being and about themselves as part of this community? How do they align their community and family beliefs with the western science being taught in class.

Personal reflection time (connecting with thoughts and feelings)

Journaling about the following topics could help students connect with thoughts and feelings:

- How did this change your thinking about Indigenous Peoples and communities in the area?
- Name three things that you respect about the cultural perspectives you learned in these lessons.
- How has this changed the way you view the night sky?

OTHER DETAILS

This Lesson Plan aims to meet curriculum expectations or outcomes for: Alberta Yes

RELATED LESSON PLANS

- Elements of Art
- Medicine Circle Teachings

CONTRIBUTORS

Name	Role/Job Title	Place
Alyssa Zack	Community Member: Teacher	Grand Prairie
Alyssa Bocking	Community Member: Teacher	Grand Prairie
Fran Rogers	Community Member: Indigenous Cultural Support Liaison	Grand Prairie
Leah Bortolin	Curriculum Review	Calgary
Linda ManyGuns	NCCIE Regional Lead	Siksika

QUESTIONS/MORE DETAILS

For Questions contact: Linda Many Guns (linda.manyguns@uleth.ca) for more information.