

The Sun, Moon, and Stars



A cross curricular unit by Rosalie, Emory, Heather, and Narius

Hello! Bonjour! Ama Sah! Ya'uc'!

We collectively acknowledge that we are learning and teaching today on the unceded lands of the Tsimshian nation, specifically the communities known today as Kitselas and Kitsumkalum. We are grateful for the opportunity to learn on and from these lands and the nations rooted in them. We commit as educators to the responsibility of respecting and uplifting the sovereignty of Indigenous languages, cultures, and nations here, and anywhere that we are privileged to teach and learn in the future.

Let's Move!

<https://youtu.be/JB6yPAISVgs>

A video which has proven to be one of the best for classroom movement.

“Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.”

Journal, Draw, or Chat with Someone Near You

When was the last time you got to “play?” How did it feel?



Our Two Week Unit

Learning doesn't always fit neatly into the modern/western structure of schools with content divided into subjects.

FIRST PEOPLES PRINCIPLES OF LEARNING

Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.

Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).

Learning involves recognizing the consequences of one's actions.

Learning involves generational roles and responsibilities.

Learning recognizes the role of indigenous knowledge.

Learning is embedded in memory, history, and story.

Learning involves patience and time.

Learning requires exploration of one's identity.

Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.

For First Peoples classroom resources visit: www.fnesc.ca

fnesc

Why Cross-Curricular?

Learning is Holistic and relational. It is land-based and experiential. It recognizes the role of Indigenous knowledge.

WEEK AT A GLANCE

	Mon	Tue	Wed	Thurs	Fri
9:00	Soft Start - SEL and Breakfast	Soft Start - SEL and Breakfast	Soft Start - SEL and Breakfast	Soft Start - SEL and Breakfast	Soft Start - SEL and Breakfast
9:25	Physical Movement	Physical Movement	Physical Movement	Physical Movement	Physical Movement
9:45	Journal or 1-1 discussions	Journal or 1-1 discussions	Journal or 1-1 discussions	Journal or 1-1 discussions	Journal or 1-1 discussions
10:00	Math/**Comp Lab.	Math/**Comp Lab.	Math/**Comp Lab.	Math/**Comp Lab.	Math/**Comp Lab.
10:30	<i>Recess</i>	<i>Recess</i>	<i>Recess</i>	<i>Recess</i>	<i>Recess</i>
10:45	Language Arts and Arts Ed	Language Arts and Arts Ed	Language Arts and Arts Ed	Language Arts and Arts Ed	Language Arts and Arts Ed
11:45	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>
12:45	Science	Science	Science	Science	Science
1:30	Physical Education	Physical Education	Physical Education	Physical Education	Physical Education
1:50	Socials	2nd Language	Socials	2nd Language	Socials
2:20	Music	Comp Lab	Music	Comp Lab	Camping Prep

**Note: on the second week of this unit, the Friday will be occupied by the camping trip.*

Daily SEL and Breakfast Soft Start

Start with “Good morning” greetings and roll call.

Students can greet the teacher using any previously taught greeting. Typically, we start with the two official languages of Canada, English (Good morning!) and French (Bonjour!), as well as the local Tsimshian First Nations’ language of Sm’algyax (Ama Gan̓aak).

Roll call can also follow the same multilingual response, along with raising hands. English (Here!) and French (Oui!), or in Sm’algyax (Haa).

Other languages can be added to the taught greeting / roll call word list to reflect whatever nationalities exist at school or in the class.

Review daily themed SEL principles such as:

Mindful Monday, Take-Charge Tuesday, Wise Wednesday, Thoughtful Thursday, and Friendly Friday.

Each day, we touch on different social skills that are crucial to building emotional health and the community in the classroom. (Source: <https://proudtobeprimary.com/sel-morning-meeting/>)

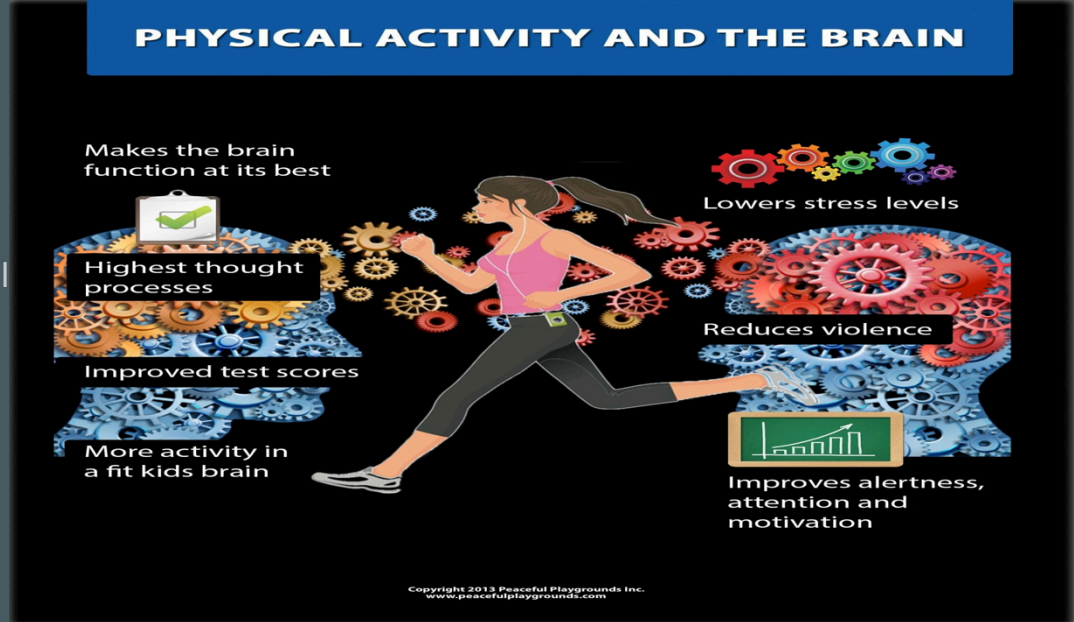
Anyone who has not had breakfast can get a cereal bar/fruit to tide them over until Snack time.

Review the date and calendar (and any important school dates for the month)

Monthly Theme - Explore how Days of the Week in French correspond to celestial bodies: (lundi, Moon, Monday), (mardi, Mars, Tuesday), etc.

Daily Physical Movement and Physical Education

Focus is on mental, emotional and social health
Then comes the physical health
Gym time should be every day
Allow students their own game time too



www.peacefulplaygrounds.com

Daily Journaling or 1-1 Discussion

- Each day following the morning SEL and movement time, students will be given the opportunity to either chat 1-1 with a classmate, journal, or draw, to reflect on a provided prompt.
- These prompts serve as recall practise for subject content, time for self-reflection and metacognition about learning, integration of academic learning and world learning, and a variety of other useful outcomes for beginning the academic day.



The topics over the course of this two week x-curricular unit will require the students to discuss or write about:

1. Their weekend
2. Something they saw outside recently
3. Something they experienced recently that made them smile
4. Something new they learned recently
5. What do they find interesting about sun, moon, stars, and outer space
6. Everything they can remember quickly from last week
7. A book or story they enjoyed recently
8. Something we've covered recently that they don't understand yet
9. What does it mean to be respectful on our camping trip (to people, place, and land)
- 10.3 stars and a wish for the camping trip (completed while waiting for the bus to leave)

Learning is holistic, reflexive, reflective, experiential, and relational

Careers Content

Rather than having a specific “Careers” class, we will integrate the following content in:

- a. Our daily journaling/ discussions
- b. Our unit’s group projects and partner work
- c. Our project, worksheet, or other assessment rubrics
- d. Our camping

Students are expected to know the following:

Personal Development

- *goal-setting strategies*
- *self-assessment*
- *project management*
- *problem-solving and decision-making strategies*

Connections to Community

- *cultural and social awareness*

Phys Ed x Science

Giving importance to holistic health

Teaching about Solar system outdoors

Hiking and camping brings out the personality - character over academic

Catching fish, cooking own meals and cooking meals together- brings harmony



ADST x Math

Unit Overview -

Students will practice decoding word problems in Math, and using decimal based math to calculate the moon phases. Coordinate systems (2D graphing) will also be referenced in computer art placement. A simple simulation of the moon phases will also be prototyped and implemented in the ADST portion using the programming language, Scratch 3.0.

Big Ideas - *Students are expected to understand ...*

- (Math) Fractions and decimals are types of numbers that can represent quantities
- (Math) Development of computational fluency and multiplicative thinking requires analysis of patterns and relations in multiplication and division.
- (ADST) Complex tasks require the acquisition of additional skills, and may need multiple tools and technologies

ADST x Math

Assessments -

- (Math) worksheets (formative / summative)
K W L chart (formative)
Kahoot! (formative)
- (ADST) Rubric for the programming project - Summative. *
Completing the rubric will ensure students are proficient in visual programming and software prototyping
*Project will be broken down into various tutorial projects.. Rubrics will be used.
(Completing these will be a Formative assessment)

ADST x Math

Days 1-2:

Math:

Review multiplying and dividing decimal-based numbers.

In groups, students use the iPads / computer resources to research the estimated times for the different moon phases in a month, and present their findings to the class.

ADST:

Review software / hardware to be used needed.

Coding - Review programming conditionals and control input, and how to load a custom background image. Students will choose a custom background to represent / reflect the current Tsimshian seasonal rounds and a night sky for their camping trip. * Art class could be done prior to create this background image.

ADST x Math

Days 3-4:

Math:

Continue to practice decimal based calculations.

Calculate all of the moon phases for the month of the camping trip.

These are used in the simulation.

ADST:

Coding - Review arrays, and number representations using sprites.

Project Simulation has a static background representing the season and imagery of a night sky. A simple user interface will adjust the day.

When the user presses on an “+” icon the day counter advances, on a “-” icon the day retreats. Coding will need boundary checks for 1 lunar cycle

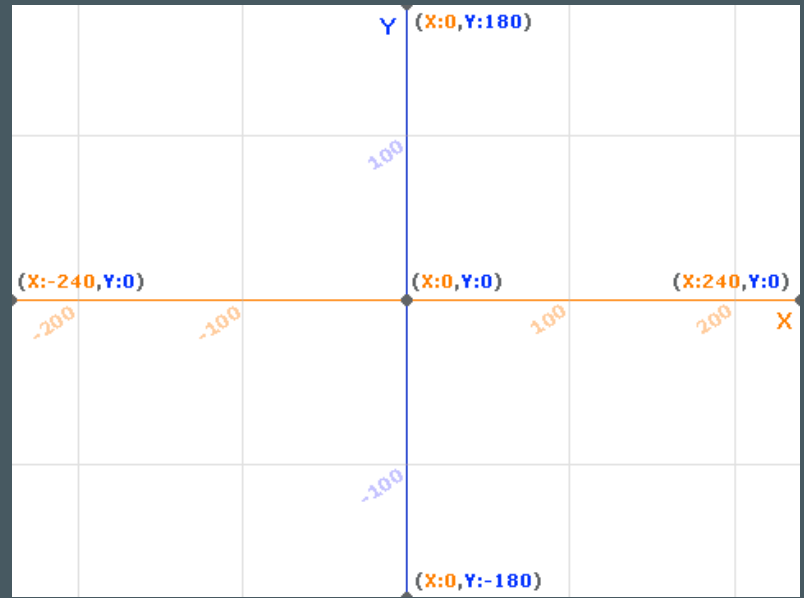
ADST x Math

Days 5-6:

Math: Continue to explore various math word problems. Complete the lunar cycle worksheet for the month of the camping trip. Review Scratch 2D grid space (480 x360).

ADST:

Coding - Students are encouraged to assist each other in resolving coding errors (*debugging*). Students will initially implement the moon phase as an image that changes on a mouse click to ensure the it can be displayed properly. Default art assets are provided to reach coding proficiency for the project. Customizing art is allowed after the code works. Day 6 is peer feedback day.



ADST x Math

Days 7-9:

Math: Additional teaching time to help students that may still have difficulty with the Math used in this project. For students who have reached proficiency, Math class will be spent doing coding.

ADST:

Coding - Implement the simulation to display the moon phase based on a day counter. The day counter increases/decreases when clicking screen controls.

Students who finish early may customize their projects or provide peer support.

Any incomplete project is NOT a failure. The students have time after the camping trip to complete this project (reach proficiency) or extend it.

ADST x Math Sim - Mockup

<https://scratch.mit.edu/projects/640531849>

Note: actual code in the demo Scratch 3.0 Project is not functional. I will likely implement it the summer break when I have more time.








Math - Lunar Cycle Background Info.

- The time it takes from one New moon to the next New moon is called a synodic (SIN-AH-DIC) lunar month. NASA scientists use this time period to estimate the moon phases. Unlike NASA, some First Nation cultures start their lunar month with the first Full moon rather than the “invisible” New moon.

Math - Lunar Cycle Background Info. (*Continued*)

- Due to the moon's elliptical orbit, the synodic lunar month ranges from 29.18 days to 29.93 days. We can get a close approximation by using the mean length (*calculate the average*) of these ranges.

In Math this means: $(29.18 + 29.93) / 2 = 29.555$. To further simplify our calculation, we will use **29.5** days as the average time needed to complete a synodic lunar month. We call this period one ***lunar cycle***.

- During a lunar cycle, the Moon goes through **8** phases:
New Moon , Waxing Crescent , First Quarter , Waxing Gibbous ,
Full Moon , Waning Gibbous , Third Quarter , and Waning Crescent .

Math - Lunar Cycle Exercise

- Challenge Time!

For the purpose of our moon-phase simulation, let's assume the time between the each of the 8 moon phases is *equal*, and that it takes 29.5 days to complete one full lunar cycle.

Calculate the average time interval between each moon phase. Show your work using long division.

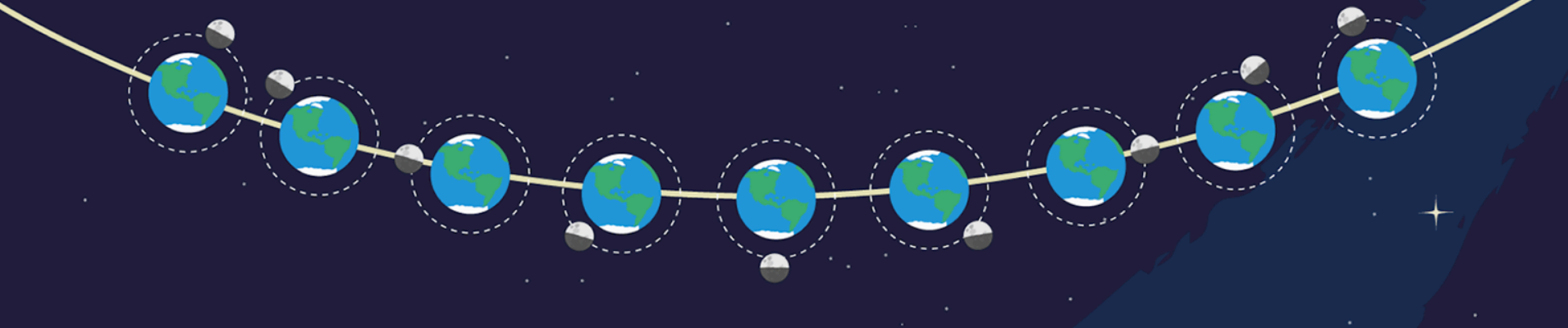
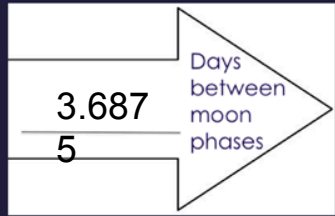
Math - Lunar Cycle Solution

$$[\text{?}] \times 8 = 29.5 \implies 29.5 \div 8 = 3.6875$$

days

$$\begin{array}{r} 3.6875 \\ 8 \overline{) 29.5000} \\ \underline{- 24} \\ 55 \\ \underline{- 48} \\ 70 \\ \underline{- 64} \\ 60 \\ \underline{- 56} \\ 40 \\ \underline{- 40} \\ 0 \end{array}$$

Math - Lunar Cycle Calendar Worksheet



The Moon as seen from Earth

Math - Lunar Cycle Exercise

- Hand out worksheet sample is available to download, and the questions can be made into a *Kahoot!*

<https://docs.google.com/document/d/1AApP44NkR8IGOI1-L4bRe3sLKKX0QcO3HiFibYiBgK4/edit?usp=sharing>

Socials



We will explore space travel from the lens of **international competition and cooperation.**

- We will discuss the space race in the context of the **Cold War**, and they ways that information and technology was kept secret from opposing countries.
- We will also discuss the **International Space Station** and other international space missions and the ways the information and technology was shared.

Finally, we will discuss the **commodification of space travel** and the recent pattern of for profit space travel for the extremely wealthy.



Students will have access to information via:

1. short teacher lectures
2. multimedia educational content (documentaries, images, short readings)
3. historical evidence (propaganda films, moonwalk footage, newspaper clippings)

Students will build and demonstrate understanding via:

1. group discussions
2. modified KWL chart (to record their understanding and predictions.)
3. Mini research project and presentation.

Science

After learning about the physical
objects in space

(such as stars, planets, moons, asteroids, galaxies...),

we will learn about how things move
in space

by exploring the

Three Laws of Motion*

*that Newton is credited with describing

In the last 3 lessons:

- I will write a law on the board.
- Students will make predictions about what it means and think/pair/share
- I will show one or more short videos to explain the law
- Students will use this information to fill out a graphic organizer
- Students may complete a low stakes quiz or exit ticket

Science Continued

Graphic Organizer

Name: Jimmothy Date: Grade 6

NEWTON'S FIRST LAW... IN SPACE!

A body continues in its state of rest, or in uniform motion in a straight line, unless acted upon by a force.

When would you see this law in space?
If an astroid is headed toward earth it will crash into earth unless something else blocks it or knocks it off it's path, like in that movie "Don't Look Up" where they have to try to blow up an astroid!

Draw your example

Is it moving or staying still:
asteroid

What object is moving or still:
moving!
Eak!

Prediction:
Would an object move like that on earth? Why or why not?

I think it would because if I threw a rock at a tree (and if I was really good at throwing) it would hit the tree it wouldn't just zig zag and come back and hit me. Unless it was a boomerang but those are probably different.

Name: Jimmothy

Date: Grade 6

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Having Trouble? Check out this video:

<https://www.bing.com/Video/search?q=newton%27s+Three+laws+of+Motion+for+Kids&viewdata=mid:CAF9861D7A66731F24CAF9861D7A66731F246&FORM=VROGAR&url%2Fvideo%2Fsearch%3Fq%3Dnewton%2527%2538Three%2520Laws%253E%3D&store%3Dfor%3D&id%2F069%3Dv%3Ea2P>

Science Field Trip Activity



A body **continues** in its state of **rest** unless acted upon by a force.

A body **continues** in uniform **motion** in a straight line unless acted upon by a force.

The **acceleration** of an object depends on the **mass** of the object and the amount of **force** applied.

Whenever **one object exerts a force on another object**, the second object exerts an equal and opposite on the first.

Benefits of connecting science learning to our lives:

- “facilitate student monitoring and directing of their own learning”
- promote problem-solving
- -self-regulation
- encourage students to work together
- “implement authentic assessment”

Science Field Trip Activity continued



“A body continues in its state of rest, or in uniform motion in a straight line, unless acted upon by another force”

As you watch this video:

Observe (and record) any examples you see in the video of the First Law

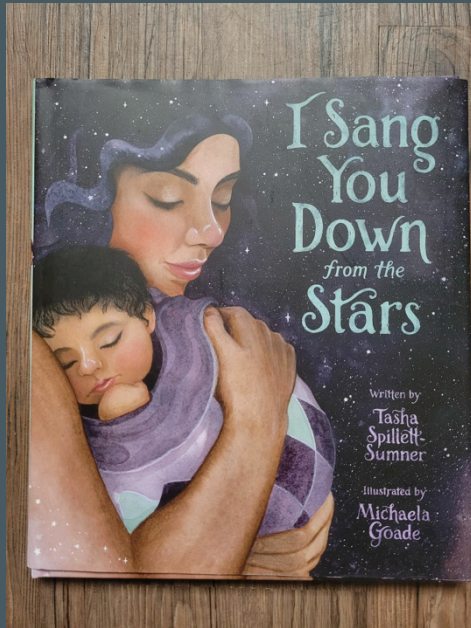
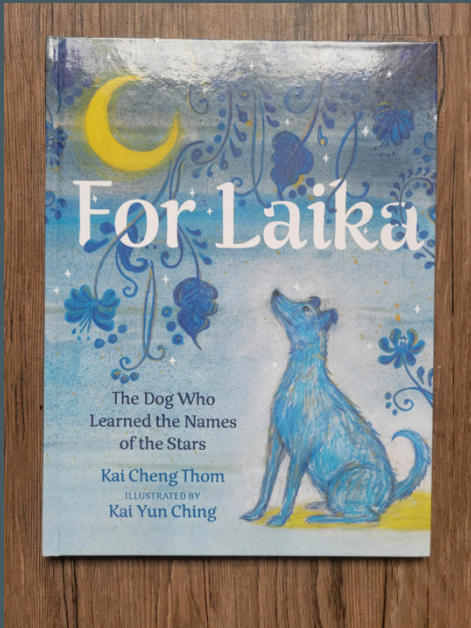
AND/OR

any ways that you would imagine The First Law playing out in the environment (naturally or otherwise)

Language Arts x Arts Education

- Students will read, listen to, watch, and analyse written, visual, and other artistic representations of the sun, moon, and stars in Indigenous cultures and other global cultures.
- They will analyse these representations and then work in groups to create their own stories and artistic representations that incorporate the sun, moon, stars, or some combination thereof.
- These stories can be presented in a variety of formats (stop-motion film, illustrated story, comic strip, etc) and will be presented to the class during the campfire on our class camping trip at the end of the unit.

Share some book and art examples, and share a mind-map and original story



Audio Resources

World tales of the Moon

Along with video examples and the visual art this was a great option for the kids who struggled with reading.





Paul Windsor - Haisla and Heiltsuk



Chase Gray - Tsimshian and
Musqueam



Roy Henry Vickers - Tsimshian

Other Texts and Images Included

- Raven and the Moon - Haisla story
- Hoobiye story and art from Nisga'a Lisims government
- A video on the Story of Chang'e (a Chinese story about the moon)
- A video where Tlingit storyteller Sharon Shorty tells about the Aurora Borealis
- A Maria Williams read aloud of her story book telling of Raven Stole the Sun
- The painting "Starry Night" by Van Gogh

Some of the Reflection Questions and Activities

On day 1 the group answered targeted reflection questions including:

- Did you notice any symbols in this story/art/video?
- How does this story reflect the identity (cultural, ethnic, gender, sexuality, disability, etc.) of the author and/or illustrator?
“The lady, Tasha, is a Cree award winning writer and poet and she’s representing her culture”
“This reminded me of the Haisla people and their connection to their land”
- How did this story reflect your own experiences or thoughts?
“I thought about how my mom waited a long time for me to be born. I enjoyed the part where the mom showed him everything she made for him and told the baby she gave him all of these things for a reason and he matters”

On day 2 the group completed mind maps about all the connections they drew.

Examples of Reflection on these Authentic Sources

Jodi & Jyn

Stories: Prices before Jyn will make bath at the same time!

Did you notice any symbols in this story?

Comment: the lady Jaska! she is a cree and using poet and she is representing her culture.

Jodi: the hisla people with their relation and believe in waves

How did this story reflect your own experiences or thoughts?

Comment: the things and memory I thought I had waited a long time for me to be born, usually the time me dad and mom when we want to be together my mom is pregnant.

Jodi: the thoughts of my mothers love

Jodi: for me

What did you enjoy about this story? Who Jodi I enjoyed it & Jyn

Comment: I enjoyed the part of when the mother shared something she made for her child she told the baby that she gave him things for his religion.

I enjoyed the part when the rest of the Jodi family came to welcome the child.

BAVEN = (recreation) (spirit = trichostema) (pride)

Stars = doo (laika)

Sun = star sun (the community)

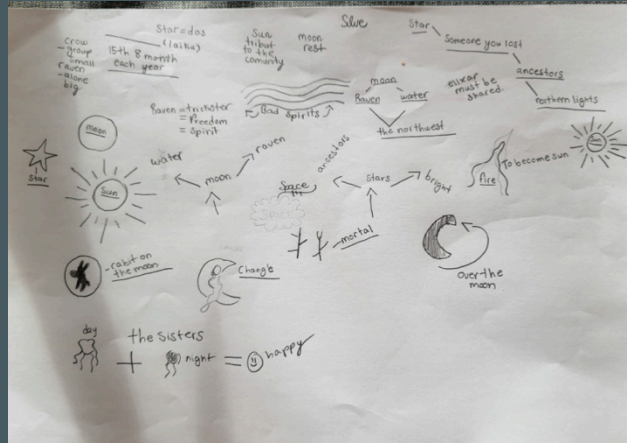
moon = moon (group)

water = water (waves)

fire = fire (power, change, blessing)

the moon, sun and stars

the thought of turning into a boy to save the moon, sun and stars.



Jodi & Jyn

Stories: Prices before Jyn will make bath at the same time!

Did you notice any symbols in this legend?

Comment: the raven ☹️

Jodi: the raven's prayers to face the chief.

How does this legend reflect its cultural or community origins?

Comment: it reflects the cultural origins because the hisla community reflects on the sun!

Jodi: the hisla community.

Have you heard, seen, or read something that has similarities to this legend?

Comment: ~~the raven~~ do I have not

Jodi: Yes The book of the 6 cedar trees.

What did you enjoy about this legend?

Comment: the raven as the boy

Jodi: How the raven wanted to free the sun, moon and stars for the hisla people.

Sun Moon Stars Unit Rubric

Group Member: _____

Reflection Element (Mind maps and reflection sheets)

Standard	Emerging	Approaching	Meeting	Extending
Inquires creatively on a variety of texts and artworks representing the sun, moon, or stars.				
Connects the sun, moon, stars texts and materials to personal and cultural identities.				
Demonstrates understanding of storytelling as an aspect of Indigenous identity and culture.				
Displays understanding of art and texts from national and international cultures.				
Considers symbolism and metaphor with reference to multiple texts and artworks.				

Sun, Moon, and Star - Create Your Own Story

What will we include in our story (circle one or more):

The Sun

The Moon

The Stars

What symbol(s) will you use and what will it represent?

_____ will represent _____

Ex. *The stars will represent my dream of being a dancer*

How will the story start (beginning)?

What will the main event be (middle)?

How will the story resolve (end)?

The format will be:

If you're not sure how to create a certain project (i.e. comic strip or stop motion) you can still choose that format! There will be videos to help you learn if you choose a new style of story.

Story and Picture

Comic Strip

Illustrated Poem

Stop Motion Movie

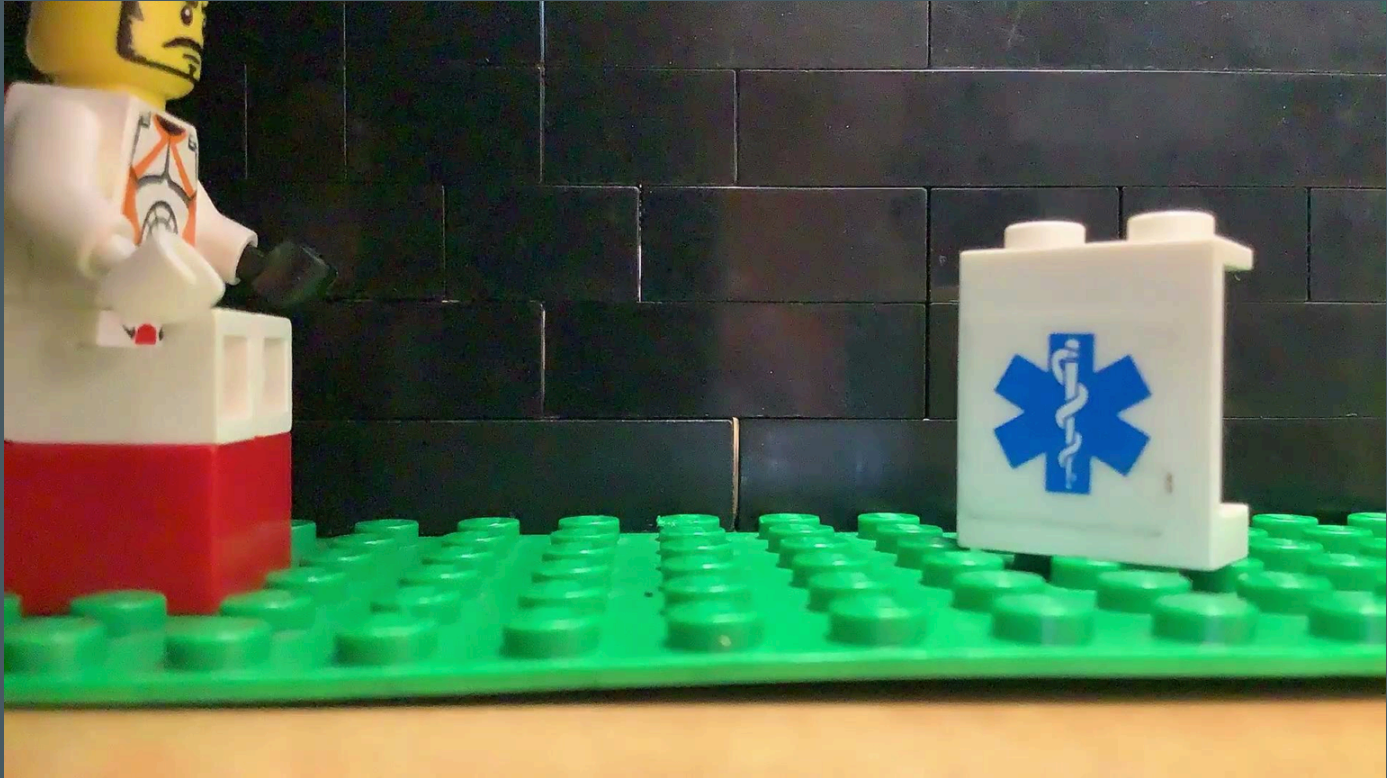
Tik Tok Style

A song

Creation Element (Creative project)

Standard	Emerging	Approaching	Meeting	Extending
Created a plan that considered elements of story including symbolism and narrative.				
Refines plans to create a text that incorporates elements of story in collaboration with the group.				
Uses oral and written storytelling to share a narrative.				
Takes creative risks to express feelings and ideas.				
Communicates ideas and themes using symbols.				

Example: Stars as Destruction



Shared with permission of my practicum students

Until next time! Au revoir! Ndm'al gyik niidznism! Dim ho gya'a'n'ism! 'iks ḡ^{wi}ḡ^{wá}ilas!

We hope this unit plan has given you ideas and resources that might find their way into your classroom as time goes on. With gratitude the resources used were as follows:

Artists: Paul Windsor, Chase Gray, Roy Henry Vickers

Books: For Laika, I Sang You Down From the Stars, Sulwe

Web link for audio stories: <https://www.lpi.usra.edu/education/explore/marvelMoon/tales/>

Work Examples: Mme Howes' 5/6 class - Kildala Elementary School

Mockup - Camping Background from SMASHING Magazine (Nov. 10, 2016):
<https://www.smashingmagazine.com/2016/11/how-to-create-a-dramatic-vector-illustration/>

Artist: Igor Izhik Website: www.izhik.com

Moon Sprite from Creative Commons: https://commons.wikimedia.org/wiki/File:Moon_0063_Nevit.svg
Neon Buttons: <https://www.dreamstime.com>

Beautiful Canada. (2021). *Lakelse Lake*. Youtube. Retrieved March 27, 2022, from <https://www.youtube.com/watch?v=TTz-uXwVgbk&t=2s>.

Morales, M. P. (2016). Exploring indigenous game-based physics activities in Pre-Service Physics Teachers' conceptual change and transformation of epistemic beliefs. *EURASIA Journal of Mathematics, Science and Technology Education*, 13(5). <https://doi.org/10.12973/eurasia.2017.00676a>