

# **LESSON PLAN**

#### Candidate's name: Aurora Mernickle

Grade/Class/Subject:	Grade 1/2 - Science	School:	Dragon Lake Elementary
Date:	Feb 15, 2022	Allotted Time:	45 - 60 min
Topic/Title:	The Water Cycle - Experiment		

#### **1. LESSON ORIENTATION**

#### Key resources: Instructional Design Map

Briefly, describe purpose of lesson, and anything else to note about the context of lesson, students, or class, e.g. emergent learning needs being met at this time, elements of focus or emphasis, special occasions or school events. The purpose of this lesson is to inspire inquisition into how the water cycle works with a visual and hands on approach. Students will make connections with how the water cycle occurs in many different ways in our home and our environment. Students will have the opportunity to think critically and make predictions based on knowledge that they have obtained throughout the unit so far. This is an age group where students enjoy playing and experimenting so combining play with scientific discovery is a perfect way to explore the world around us.

### 2. CORE COMPETENCIES

#### Key resources: https://curriculum.gov.bc.ca/competencies

Core /Sub-Core Competencies	Describe briefly how you intend to embed Core Competencies in
(check all that apply):	your lesson, or the role that they have in your lesson.
COMMUNICATION – Communicating	-Students will share ideas, questions and inquiries.
COMMUNICATION – Collaborating	-Students will reflect on how this knowledge is useful and meaningful to them and society. -Students will reflect and make connections to previous learning
THINKING - Creative Thinking	to understand a new concept. -Students will share how they understand the material covered
THINKING – Critical Thinking	-Students will make connections with family and community with regards to how this is meaningful.
THINKING – Reflective Thinking	-Students will develop an understanding regarding how each student can have different ideas but still be correct while
PERSONAL AND SOCIAL - Personal Awareness and Responsibility	practicing acceptance & tolerance.
PERSONAL AND SOCIAL – Positive Personal and Cultural Identity	
PERSONAL AND SOCIAL – Social Awareness and Responsibility	

#### 3. INDIGENOUS WORLDVIEWS AND PERSPECTIVES

Key resources: First Peoples Principles of Learning (FPPL); Aboriginal Worldviews and Perspectives in the Classroom

FPPL to be included in this lesson	How will you embed Indigenous worldviews,
(check all that apply):	perspectives, or FPPL in the lesson?
<ul> <li>Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.</li> <li>Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).</li> <li>Learning involves recognizing the consequences of one's actions.</li> <li>Learning involves generational roles and responsibilities.</li> <li>Learning recognizes the role of Indigenous knowledge.</li> <li>Learning is embedded in memory, history, and story.</li> <li>Learning requires exploration of one's identity.</li> <li>Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.</li> </ul>	<ul> <li>Students will recognize that they are learning together and that it takes time and practice to gain skills.</li> <li>Students will practice skills of respect, understanding of one another and acknowledgment of how the individual actions of one can effect many.</li> <li>Students will work in partners to help support the understanding of individual responsibility and consequences of actions. Each student will have the responsibility to their partner and themselves to be respectful</li> </ul>
	their partner and themselves to be respectful and cooperative during this experience.

## 4. BIG IDEAS

Key resources: https://curriculum.gov.bc.ca/ (choose course under Curriculum, match lesson to one or more Big Ideas)

What are students expected to understand? How is this lesson connected to Big Idea/s or an essential question? Water is essential to all living things, and it cycles through the environment.

Materials can be changed through physical and chemical processes.

Observable patterns and cycles occur in the local sky and landscape.

#### **5. LEARNING STANDARDS/INTENTIONS**

Key resources: <u>https://curriculum.gov.bc.ca/</u> (choose course under Curriculum)

Curricular Competencies:	Content:
What are students expected to do?	What are students expected to learn?
Questioning and predicting	-Local patterns that occur on Earth and in the sky
-Demonstrate curiosity and a sense of wonder about	
the world.	-The water cycle
-Observe objects and events in familiar contexts.	
-Ask simple questions about familiar objects and	
events.	
Planning and conducting	
-Make and record observations	
-Safely manipulate materials to test ideas and	
predictions	
Processing and analyzing data and information	

-Compare observations with predictions through discussion -Identify simple patterns and connections <u>Applying and innovating</u> .
discussion -Identify simple patterns and connections <u>Applying and innovating</u> .
-Identify simple patterns and connections           Applying and innovating.
Applying and innovating.
Applying and innovating.
- Take part in caring for self, family, classroom and
school through personal approaches
-Transfer and apply learning to new situations
Generate and introduce new or refined ideas when
problem solving
Communicating
-Communicate observations and ideas using oral or
written language, drawing, or role-play
-Express and reflect on personal experiences of place

## 6. ASSESSMENT PLAN

Key resources: Instructional Design Map and https://curriculum.gov.bc.ca/classroom-assessment

How will students demonstrate their learning or achieve the learning intentions? How will the evidence be documented and shared? Mention any opportunities for feedback, self-assessment, peer assessment and teacher assessment. What tools, structures, or rubrics will you use to assess student learning (e.g. Performance Standard Quick Scale)? Will the assessments be formative, summative, or both?

<u>Formative assessment:</u> (used to ensure that the information is available and students are getting the most from their learning)

Are the students connecting with the material through inquiry and discovery?

Are the students engaged in a positive way (thumbs up, smiles, collaboration, sharing stories and showing interest)? Are students able to extend their learning of these concepts into personal experiences?

Are students able to engage in scientific inquiry and understand the steps of the process with independent thought?

## Summative Assessment:

At the end of this experiment students will fill out their own understanding of the water cycle with relation to the experiment on a water cycle worksheet. Students will give a brief description of each part of the experiment and connect it to the parts of the water cycle to ensure that the connections of the process are being understood.



## 7. DESIGN CONSIDERATIONS

#### Key resources: Instructional Design Map

Make brief notes to indicate how the lesson will meet needs of your students for: <u>differentiation</u>, especially for known exceptionalities, learning differences or barriers, and language abilities; inclusion of diverse needs, interests, cultural safety and relevance; <u>higher order thinking</u>; <u>motivations</u> and specific <u>adaptations</u> or <u>modifications</u> for identified students or behavioural challenges. Mention any other design notes of importance, e.g. cross-curricular connections, organization or management strategies you plan to use, extensions for students that need or want a challenge. -Students will have multiple sources of material to connect the understanding (verbal, pictorial, and experiential).

-We will have an extra support person to help manage the activity and possible challenges.

Students will be experimenting with materials that require some supervision and support. Students will be working in partners as well. This can lead to some challenges with regards to self moderation and social emotional learning.

-Students will be able to communicate with written, verbal and pictorial interpretations.

-Vocabulary needed for understanding the lesson will be pre-taught and integrated throughout the lesson. Students will have already had 2 lessons to integrate the vocabulary but teacher will continue to review throughout the lesson.

**Required preparation:** Mention briefly the resources, material, or technology you need to have ready, or special tasks to do before the lesson starts, e.g. rearrange desks, book a room or equipment.

- 15 plastic ziplock bags

- 1 bottle blue food colouring

- 13 black sharpies
- kettle to boil water
- tap water
- whiteboard and markers
- water cycle worksheet x 25 copies

#### 8. LESSON OUTLINE

Instructional Steps	Student Does/Teacher Does (learning activities to target learning intentions)	Pacing
<b>OPENING:</b> e.g. greeting students, sharing intentions, look back at what was learned,	-Teacher will ask all students to meet at the carpet to talk about an	
	experiment that we are going to do.	10-15 min
	-Teacher will ask students if they remember the previous lessons about	
learning, use of a hook,	the water cycle.	
motivator, or other	-Class will have a short discussion about what is remembered about the	
students and activate	water cycle and write out the different parts of the cycle on the	
thinking and prior knowledge	whiteboard.	
	-We will discuss as a class what our understanding of each of these	
	parts of the cycle mean and what happens in each.	
	-Teacher will then describe what the experiment is going to look like:	
	take a plastic bag	
	<ul> <li>draw a sunshine, water, clouds and a few raindrops on the bag</li> </ul>	
	add a small amount of water	
	add a few drops of blue food colouring	
	<ul> <li>boil the kettle and add a small amount of hot water</li> </ul>	
	https://abnc.ca/wordpress/wp-content/uploads/2020/05/Water-Cycle-	
	<u>experiment.pur</u>	
	-Teacher will then ask students what there predictions are about what	
	will happen. Teacher will explain that predictions are statements that	
	someone makes about what they think is going to happen. Teacher	
	will accept a few answers and then say that "I am now going to partner	
	you up and we are going to find out!"	
	-Teacher will then choose partners and ask each set to come and get	
	their supplies:	

	one plastic bag	
	<ul> <li>one sharpie (they will be informed that they must take turns</li> </ul>	
	drawing each item (clouds, sun, water, rain).	
	-Teacher will explain that once each set of partners has finished	
	drawing they can go and add a small amount of water to their bag, not	
	quite up to the water line that they will draw. Teacher will tell students	
	that this process should only take a few minutes and we are not doing	
	fancy drawings.	
	-Teacher will allow for any questions.	
	-Teacher will then send students off to their desks to get started.	
BODY: Bost order of activities to	-Teacher will ask students to be respectful and patient as they line up to	
maximize learning	get their water after they have drawn their picture on the bag	10-20 min
each task moves students towards	-Teacher will begin heating the kettle for the next part and then circulate	
learning intentions	adding the drops of blue food colouring for those who are ready.	
Students are interacting with new ideas. actively	-Teacher will remind students to stay at their desks as the food colouring	
constructing knowledge	and hot water will be coming around.	
and understanding, and given opportunities to	-Once the water is heated teacher will bring the kettle around and carefully	
practice, apply, or share learning, ask questions	take the bag from each student to pour a small amount into each one.	
and get feedback	While this is happening teacher will ask the students why they think the hot	
Teacher uses learning resources and strategic	water is being added and what part of the water cycle this represents.	
opportunities for guided	-Teacher will allow for some thought and then explain that the sun heats	
instruction, and/or	the water in our environment but because we are inside and do not have a	
modelling Can include: transitions	sunny window we are using water that is heated in a kettle to imitate the	
sample questions,	sun's heating process (causing evaporation).	
student choices, assessment notes	-Teacher will check for understanding and ask what the students think is	
(formative or otherwise), and other applications of design considerations	going to happen.	
	-After adding hot water up to the water line in the bag teacher will ensure	
	that it is sealed and hand it back to the students informing them to hold it	
	upright and watch what happens	
	-Once all students have had their water filled and are able to watch the	10-15 min
	water evaporate and condense on the side of the bag, teacher will draw a	
	diagram on the board showing the bag and discuss as a class as teacher	
	writes the different stages of the water cycle in relation to the experiment	
	and explains what is happening at each stage	
	The science behind it:	

	"When the water gets heated up by the sun, it starts to evaporate $-$	
	meaning tiny water particles jump from the water into the air. Evaporation	
	is the word we use when liquid turns into gas. The tiny water particles get	
	collected on the inside of the plastic bag because the bag is sealed, and	
	after a while we can start to see water droplets forming. This is called	
	condensation, the word we use when gas turns into liquid. When the	
	droplets reach a certain size, they start to join together into bigger water	
	drops and fall down in the water (just like rain). This process is called	
	precipitation."	
	https://medium.com/drax/water-cycle-in-a-bag-40a9ed0eb50d	
	- Teacher will then hand out the worksheet and ask the students to write	
	the parts of the process on it as they understand it.	
	-Teacher will circulate with feedback and support.	
CLOSING:	-Teacher will give a brief explanation of the process with regards to the	5 -10 min
gather, solidify, deepen	worksheet.	
or reflect on the learning review or summary if	- Teacher will then ask students if anyone notice that the blue water did not	
applicable anticipate what's next in learning "housekeeping" items	condense into rain drops and ask if they knew why.	
	-Teacher will give a short description of why: "it has a much higher boiling	
	point than water. It takes much more energy for molecules of the colouring	
requirements	compound to break free of the liquid than for molecules of water."	
	https://chemistry.stackexchange.com/questions/33411/why-is-condensation-	
	in-dyed-beverages-colorless	
	This will be a tricky concept to understand as we have not covered this	
	material but teacher will let students know that this will be covered in	
	future lessons.	
	- Teacher will ask that, once they are finished, students hand in the sheet and	
	put the plastic bags in the sink and go back to their desks for word work.	

## 9. REFLECTION (anticipate if possible)

Did any reflection <u>in</u> learning occur, e.g. that shifted the lesson in progress? What went well in the lesson (reflection <u>on</u> learning)? What would you revise if you taught the lesson again? How do the lesson and learners inform you about necessary next steps? Comment on any ways you modelled and acted within the Professional Standards of BC Educators and BCTF Code of Ethics? If this lesson is being observed, do you have a specific observation focus in mind?

Learners inform of next steps by how they show their understanding: -Are they interested and on task or getting distracted? -Are they showing any expected learning outcomes? -Are they showing signs of frustration or anxiety?

Did the students enjoy the lesson?

Students were connected to the material and engaged in the experiment. They were inquisitive as to what might happen and tried to understand the processes that they saw.

Were intentional connections made and can we build on this process? Do the students have connections to past and future learning experiences?

Students were able to link previous learning in the unit to what they were seeing and experiencing. Most students were able to make the cross connections of the cycle within the bag to the cycle in "real life" on the planet.

This helps students tangibly understand the water cycle process.

We will continue this unit further with inquiry about water and its uses as well as conservation and indigenous knowledge.

The more the students understand and are able to make connections to the world around them, the more capable they will feel.

Can students have a take home message that they feel good about?

Students were excited to take an extra bag home to show their families what they learned and how the water cycle in the bag works. I even got some feedback from one of the parents about how excited their child was to show the science behind the water cycle.

Was the material inclusive?

All students were able to participate and collaborate. The students worked in pairs so it was fun to see how they interpreted what was happening to their desk partner. Some students enjoyed writing about the process, other students enjoyed watching and other students enjoyed touching the bag to see and feel what was happening.

What would I do differently next time?

If I were to teach this lesson again I would have loved more time to explore the process and give the bag a few days on a sunny window. I did tape the bag on the window but we do not have a lot of sun on our classroom window. I would also try and call on students that do not necessarily answer many questions to challenge them to take chances while supporting their successful learning.

How did I model the standards?

I was patient and considerate of each student's learning needs. I took the time to help bridge the connection so that each student could find meaning.

Reflection in learning:

While I was teaching the lesson I decided that I would have the students line up at the table to get their hot water as opposed to me coming around with hot water. This worked out better.

Some students were struggling with what to write so as the lesson progressed I gave a few more clues to students while encouraging them to also add their own ideas.

