# LESSON PLAN TEMPLATE

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| **Date** | February 22nd, 2021 | **Lesson Title** | Pinecones in Winter Science Experiment | **Grade Level** | 1 |
| **Time in Lesson** | 1 hour (1:15-2:15) | **Subject** | Science: Winter Season Unit | **Lesson #** | 3 |
| **Developed by** | **Cassandra Boland** | | | | |

## IDENTIFY DESIRED RESULTS

### Learner Outcomes from the Program of Studies
**What are the SPECIFIC outcomes to be addressed in this lesson?**

**Topic 1B. Seasonal Changes (Winter) & Emphasis on Inquiry**

**General Learner Expectations:** Describe seasonal changes and interpret the effects of seasonal changes on living things.

- Looking beyond themselves and beyond the immediate weather, students are guided to discover that there are larger patterns of change that affect the life habits of many living things.
- ***Specific Learner Expectations 1:*** Describe the regular and predictable cycle of seasonal changes (weather).
- ***Specific Learner Expectations 2:*** Identify and describe examples of plant and animal changes that occur on a seasonal basis:
  - changes in form and appearance
  - changes in location of living things
  - changes in activity; e.g., students should recognize that many living things go into a dormant period during winter and survive

| Objective in student-friendly language<br>**What will students understand/experience/appreciate as a result of this lesson?** | Assessment Strategies<br>**What will I accept as evidence of learning/development? Have I employed formative assessment? Do I make use of prior assessments in this lesson?** |
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| By the end of this lesson students will understand how plants are impacted by Winter weather. They will inquire and experiment with pinecone changes due to colder weather. They will appreciate the resilience of plants in the Winter and how they survive extremely cold temperatures by going into a dormant period. | Students will demonstrate their evidence of learning and development through group discussions, giving a thumbs-up/down when new information is presented and documenting their hypothesis during the experiment portion of the lesson. Students will also be able to assess their own learning by comparing their hypothesis to their final observations. Prior assessments will be made by recapping last week's lesson on how Winter weather impacts humans and how this differs or relates to plants in a group discussion where students will share with the class their knowledge. This will also connect to prior understandings |

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| | of Native American folklore that we have covered in English Language Arts lessons. |
| **Resources**<br>**What materials/resources/technology will be required?** | **Personalization/Differentiation**<br>**How will you attend to the needs of ALL learners in this lesson?** |
| • Laptop - Native American Pinecone Folklore: *https://www.naturekidsbc.ca/douglas-fir-and-the-mice/*<br>• Learning Screen - Lodgepole Pine Slide: https://docs.google.com/presentation/d/1DRv3Uu-1fXeWR4ZRujJ3A4dYWWJ3MObLP81If1Wxlts/edit#slide=id.p<br>• Winter Activity Book: Plants in Winter and observation pages<br>• Pencil and eraser<br>• Two glass jars<br>• White Spruce pinecones<br>• Blue Spruce pinecones<br>• Ice cold water | I will **personalize** each student's learning through these ways...<br>• Observe students and support them individually in relation to their IPP goals.<br>• Create a positive classroom environment that supports 1:1 support, question periods, peer engagement and respectful open conversation.<br>• Invite students into the lesson and follow COVID protocols by walking around the class to showcase changes during the science experiment and reduce feelings of disconnect.<br><br>I will **differentiate** groups of students' learning through these ways...<br>• Provide varying writing expectations for each student based on their literacy level.<br>• Allow students to document their observations through written and illustrated mediums.<br>• Understand that each student may interact during discussion periods in varying ways and ensure that all students are heard. |

## LESSON PLAN SEQUENCE

| **Introduction**<br>**How will you ACTIVATE prior knowledge and ENGAGE them in the lesson and how does this lesson connect to prior lessons?** |
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| **Activate Prior Knowledge:** Initiate lesson with a recap of what we learned last week in our Winter Season lesson. We learned about the characteristics of winter weather in Alberta (icy, snowy, cold and windy) and now we are going to learn about how Winter weather impacts plants. Ask students to share observations of Winter weather outside over the past week: how does it feel and look? Have they noticed how Winter changes plant and animal behaviour and how they appear outside? This allows for real-world connections when learning. |

**Hook:** Read the Native American folklore about Douglas Fir & The Mice. Show students examples of a White Spruce pinecone and a Blue Spruce pinecone. Can they see the mice feet?

**Engage:** Introduce concept of plants in Winter. What happens to a pinecone in cold weather? Start science experiment at the front of the class with in a jar of icy water. Students will fill-out their hypothesis/guess. Show them photos of a Lodgepole Pine's pinecones and how they only open after a fire. Why do they think this happens?

## Learning/Activity Sequence

**How will students ENGAGE, EXPLORE, EXPLAIN, ELABORATE, and/or EVALUATE their understandings of the outcomes.**

| What is the TEACHER doing? What is your plan for the body of the lesson? What steps are taken during the lesson? | What are the STUDENTS doing? How are they engaged while you are teaching the lesson? | Approx. time |
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| **Connect to Prior Learning:** Last week we listened to the *How Do We Know It's Winter?* video and started our winter activity sheet about the feelings of Winter weather in Alberta (icy, snowy, cold and windy). Today we are going to learn what happens to plants in the winter! Can anyone share what they have noticed happens in the winter with plants around them outside? | Students will make real-world connections to the Winter season and share with the class their observations of the season outside by raising their hand. | **3 minutes** |
| **Connect to Prior Learning:** We have been talking a lot about coniferous trees recently…can anyone remind us what a coniferous or evergreen tree is? I also wonder what might happen to plants in the winter - especially pinecones! | Students will share their knowledge of coniferous trees and discuss what they think happens to pinecones in the winter. They will raise their hand to share. | **3 minutes** |
| **Hook:** I have a short Native American/Indigenous folklore about the way that pinecones look. Who remembers what a folklore is? Think about the recent Native American story we read this morning - Skunny Wundy.<br>• Read Douglas Fir & The Mice: *https://www.naturekidsbc.ca/douglas-fir-and-the-mice/*<br>• Share pinecone image on the learning screen and ask students if they see the little mice feet. | Students will share their knowledge about Indigenous folklore and listen to the reading. After the reading they can discuss whether or not they see the little mice feet on the pinecones. | **7 minutes** |
| **Engage/Explore** We are now going to start a science experiment to see what happens to the scales of a pinecone! We are going | Students will fill-out their name in the workbook and observe the pinecones as I walk around the class. They will then make a | **20 minutes** |

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| to infer (that's our academic word this week) to help us conclude or find the answer based on evidence, what happens to pinecones in the winter! I wonder what will happen to those little mice feet or scales on the pinecone (hold up the pinecone and point out the scales).<br>• Hand out booklets and ask students to go to the last page.<br>• We will turn to the back of our booklet and write our hypothesis or guess of what will happen to the pinecone in the cold water (which represents Winter weather).<br>• Walk around the class with the White Spruce and Blue Spruce pinecones for students to observe.<br>• Place one pinecone in the cold water.<br>• Write on the board: My hypothesis is that the pinecone in the cold water will _____.<br>• We will look again at the end of the lesson to see if we can notice any changes and see if our guesses are correct! | guess/hypothesis of what will happen to the scales (or mice feet) on the pinecones when they are very cold (like in Winter weather). | |
| **Elaborate:** While we wait to see what happens to our pinecones, I wanted to share a cool science fact with you all! There is a very special type of pinecone that comes from the Lodgepole Pine that only opens during a FIRE! Do any of you have an idea why it might only open in a fire?<br>• After guesses show it on the learning screen. | Students will guess why a Lodgepole Pine pinecone opens during a fire. They will then see the result on the learning screen to see if their guess is correct. | **4 minutes** |
| **Body Break:** Ask students to stand up behind their desks to act out a pinecone in a fire. Start of still on a tree and blow in the wind. The fire is coming! Slowly start to open up (deep breaths x 3). The fire has finished, touch your toes to the ground. Some years have passed, and you have grown into a tree (stretch as tall as you can)! Sit down. | Students will follow along with the body break. | **3 minutes** |
| **Elaborate:** Ask students to flip to the front of their book to the *Plants Change in Winter* activity.<br>• Read with the class and ask them to trace the words<br>• Go to the board: Why doesn't grass grow in the winter?<br>  ○ Write down dormant on the board (deep sleep)<br>  ○ Write down guesses | Students will follow along with the activity sheet as a group (we do approach). They will also participate in further discussions about what they think happens to plants in the Winter. | **10 minutes** |

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| ○ Grass hibernates like animals! The blades of grass can't grow in the frozen dirt.<br>○ Blueberry answer for second portion | | |
| **Evaluate:** Return back to the pinecone experiment. Ask students to flip to the back of their book to their experiment page. Walk around the class with the pinecones.<br>• Encourage students to draw the final outcome of the pinecones.<br>• Ask students to share their findings – was their guess different?<br>• Why do pinecone scales (or mice feet) close in the Winter? After discussing explain it is because the pinecones go dormant (or to sleep) like the grass in our worksheet. They close to protect their seeds so they can release their seeds in the Spring!<br><br>**Exit:** Ask students for a thumbs up or down if they understand why pinecones close in the winter and that plants go dormant (or in a deep sleep). | Students will draw their observations and discuss if their hypothesis was correct. Why do they think the scales close? Students will give a thumbs up or down at the end of the lesson to share if they understand today's lesson. | **10 minutes** |

## Conclusion

**How will you ensure students walk away with a sense of understanding the PURPOSE of the lesson and its IMPORTANCE to their learning?**

How will you organize so that students can individually and collectively answer the EQ for this lesson?

- Each student will be provided an opportunity to be heard and share questions in a safe and open classroom environment.
- Each student will complete their own hypothesis and observation of the experiment, thereby making their own connections to the purpose of POS outcomes.
- Each student will be able to share their developing knowledge of why and how plants are impacted in the Winter and make important real-world connections through engaging discussions and experimentation.
- Each student will draw upon previous knowledge of changing seasons, Indigenous folklore and how Winter impacts not only us, but plants.
- Each student will continue to appreciate the importance of building their communication skills and working through any doubts of sharing their developing knowledge (due to challenges with perfectionism and fears to make mistakes) by learning how experimentation is all about making guesses and learning from our mistakes.

How will you organize so that students can show their learning?

- Students will be asked to share with the class definitions and knowledge gained from previous lessons to help remind others about important topics and connections.
- Students will be asked to give a thumbs up/down for formative check-in's during the lesson.
- Students will complete their hypothesis and observation worksheet through written and illustrative mediums for summative assessment and be able to partake in a final open discussion with the class to demonstrate their growing knowledge verbally.

## PRE-SERVICE TEACHER SELF-REFLECTION

- **How do you feel your students experienced this lesson?**
- **How were they able to make explicit and self-evaluate their growing understanding, skills and/or knowledge?**
- **How did you employ formative assessment for/of/as learning?**
- **Were you successful in reaching all students? How do you know? How did you accommodate for diverse learners and those requiring accommodations?**
- **Were there opportunities to address Indigenous, multicultural and interdisciplinary activities and knowledge?**
- **What went well and what needs refinement? What might you do differently next time?**

**Overall, students were engaged in the discussion about the impact of plants in Winter. Lots of students wanted to share their previous knowledge and were excited to participate in the experimentation portion of the lesson. I did notice at one point that some students were starting to become a bit lethargic, which could be because it was close to end of day and I'm glad I came up with a body break activity. Next time, however, I will move that body break up sooner in the lesson and be more flexible with them – even if it's just doing 10 jumping jacks. I've noticed how important it is to have Grade One students up and moving!**

**I am thankful that I took the time to check in on student's learning at the end of the lesson where we recapped as a class what happens to plants in the Winter. Their activity book allowed them to document their learnings and self-evaluate their growing knowledge throughout the experiment. We also did a thumbs up/down to represent their enjoyment of the lesson and whether or not they would like to do more science experiments moving forward. The whole class was very happy to do more experiments (even two thumbs up!). I will continue to execute experiments and hands-on learning during science lessons. I will also continue a mix of worksheet activities for students to demonstrate their knowledge and colour (which one student really enjoys).**

**I incorporated diverse learners by providing multiple literacy entry points (sentence starters, written, verbal and illustrative forms of communication). There was one student that found it more challenging to think of a hypothesis, so we asked other students to share their own guesses to inspire him. This student really enjoyed seeing the final result of the experiment and we reminded him that it's about the learning journey – not about getting your hypothesis right. This is something I will continue on with our gifted students who struggle with perfectionism.**

**There were opportunities to address Indigenous Ways of Knowing. Students recalled Native American folklore from their ELA lessons and used 'mice feet' as an example when explaining the scales of a pinecone in the experiment.**

**The biggest thing I will try to change moving forward is being more flexible with body breaks and work on my confidence to not always stick to my structured lesson plan. I also look forward to more fun and engaging experiments with the class!**