Grade 6: Trees and Forests Presentation

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INTRODUCTION

Students will learn about the different types of trees and forests found in Alberta and the importance of forest ecosystems. The following PowerPoint and activities will develop skills for identification of various plants and trees that live in the boreal forest, and the importance of forest ecosystems to the greater environment.

LEARNING OBJECTIVES:

By the end of this lesson, students will:

- Identify the differences and similarities between different types of trees
- Identify reasons why trees and forests are valued
- Identify humans uses of forests and how they are managed
- Understand the effects of human impacts on forest ecosystems

LOCATION:

This PowerPoint can be taught in any classroom with a projector or Smartboard.

SET UP:

- Download the PowerPoint presentation from www.lsfes.org
- Download "*Guide to the Common Native Trees and Shrubs of Alberta*" from Inside Education www.insideeducation.ca
- Print off glossary "*Glossary of Terms*" in the back of this lesson plan for each student.
- If students need more practice in identifying trees of the boreal forest – research the link below in advance https://lsfes.org/resources/trees-of-the-boreal-forest/

This lesson plan can be taught in one time frame but for ease of teaching we have split it into 3 parts:

I. Introduction of Forests
   Tree and Plant Identification
II. Natural and Human Uses of the Forest
III. Trees and Forest Quiz

GRADE: 6

TEACHER PREPARATION TIME: 20 minutes

LESSON DURATION: Part I – approx. 60 min.
Part II – approx. 60 min.
Part III – approx. 15 min.

PREREQUISITE: None

WORKSHEETS: Attached

CONNECTIONS TO SCIENCE CURRICULUM

TOPIC E:

E-1 Identify reasons why trees and forest are valued

E-2 Describe kinds of plants and animals found in forests

E-3 Identify general characteristics that distinguish trees from other plants, and characteristics that distinguish coniferous from deciduous.

E-4 Identify characteristics of at least 4 trees found in the local environment, two being deciduous and two being coniferous.

E-5 Describe and classify leaf shapes, leaf arrangements and overall from of the tree.

E-6 Identify human uses of forests

E-7 Identify human actions that can enhance or threaten the existence of forests.

E-8 Identify an issue regarding forest use and various perspectives on that use.

MATERIALS

Attached Worksheets

- Glossary of Terms

Extra Activity

- Indirect Wood Products Box
- Direct Wood Products Box
- Ideas for Hiking in a Park or a Forest

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PROCEDURE:

To start the lesson plan download the Grade 6 Trees and Forests PowerPoint presentation from www.lsfes.org. Follow the script below as you present the PowerPoint. This script may also be found in the speaker notes of the PowerPoint presentation.

Answers are in italics

Slide 1.

Welcome to the Trees and Forests presentation. Over the next hour we will learn why trees and forests are important and why we need to manage them properly so we have trees and forests forever.

> *Note to teacher: this presentation focuses mostly on Alberta's boreal forest but most of the information applies to all the forests in Alberta. The main difference between Alberta's forests is the tree and plant species growing in each forest due to a change in elevation. Changes in elevation make differences in the temperature, soil type, growing season and the climate.*

Slide 2.

PART ONE Introduction to Trees and Forests
Tree and Plant Identification

Slide 3. Why are trees and forests important?

Ask students why they think trees and forests are important? Why do we need them? What benefits do we get from trees and forests?

Possible answers are on next slide

Slide 4

Possible Answers

1. *Oxygen – trees give off O2 - we breathe in the O2 – we breathe out CO_2 and the trees take it in - they clean our air*
   Also, young healthy forests absorb and store CO_2 thus helping to combat climate change
2. *Habitat – a place for animals to live*
3. *Soils - Holds the soil in place – roots help stop erosion from wind and rain*
4. *Biodiversity - A huge variety of plants and trees grow in the forest – they provide biodiversity – bio mean life and diversity means variety -- therefore Biodiversity means the variety and complexity of all living things and the way they interact within a forest*
5. *Clean our water – help to keep our lakes and rivers and creeks clean*
6. *Recreation - Provide us with recreational opportunities – like hiking, quadding, bird watching, hunting, camping etc.*
7. *Wildlife get their food from the forest – seeds, leaves, twigs, nuts, other animals, etc. Humans also get some of their food from the forest – maple syrup, nuts, seeds, meat, fruit, berries, etc.*
8. *Wood products – lumber, OSB (**O**riented **S**trand **B**oard), veneer, pulp, etc.* ***(bring in samples so students can see what they look like)***
   Ask students what is made out of trees in this room? Walls, desk, pencils, paper, roof, etc.

9. Jobs – lots of people have different jobs in the forest and one of those jobs is to plant trees, another is to work in forestry
10. Traditional - Indigenous people rely on the forest for traditional uses such as hunting, trapping and gathering food.
11. etc.

Slide 5. How do trees clean the air – answer on slide

Slide 6. Life in the boreal forest

All living things in the forest require oxygen to survive – they get oxygen from the air we breathe. Life in the forest includes:

- all the living things that we see here, animals, birds, insects, trees, plants, flowers, etc.
- and all the non-living things such as water, air, soil, sunlight, etc.

All of these things make up an ecosystem.

Slide 7. What is an ecosystem?

click for answers

- *an interacting system of living organisms and their environment*
- *It consists of living and non-living things*

click

What are some living things in a forest? Some examples are:

- Trees
- Animals
- Insects
- Birds
- Amphibians
- Flowers
- Plants
- Fungus
- Bacteria
- Etc.

click

What are some non-living things in a forest? Some examples are:

- Sun
- Clouds
- Sky
- Soil
- Rocks
- Air
- Water
- Etc.

Click
What is the largest forest ecosystem in Alberta?
Click for Answer: *The Boreal Forest*

Slide 8. Boreal Forest Ecosystems
The Boreal Forest is a very big ecosystem but within it there are smaller ecosystems such as:
Click for pictures to appear

1. New growth after a wildfire,
2. Mixedwood forest with both evergreen (coniferous) trees and broadleaf (deciduous) trees,
3. Climax forest which is considered a very old forest. (A climax forest has trees that are over 150 years old in Alberta. This type of forest is starting to fall down. Trees that are 80 – 120 years old are considered to be in a healthy, mature forest)

Different plants grow in different ecosystems depending on the soil, temperature, the climate and the length of the growing season.

4. Pine trees are best adapted to grow in a sandy soil.
5. Black spruce trees are best adapted to grow in wet peat moss.
6. Cattails grow on the edges of ponds and marshes.
7. Plants that grow on a mountain top are not the same as plants that grow on a lake shore.

Knowledge of the types of trees and plants will indicate what kind of wildlife live in the area, the type of soil and can help us to manage a forest for all uses.

Slide 9. Natural Regions of Alberta

1. Where do we find forests in Alberta?
2. On this map, there are 6 natural regions. 5 of these natural regions include forests – which one do you think is not a forested area? "*Grassland Region*"
3. Which natural region do you live in?
4. Which forest is the largest forest in Alberta? "*Boreal Forest*"

Slide 10. Largest Forest
Not only is the boreal forest the largest forest in Alberta – it is the largest forest in Canada – and the largest forest in the world – as you can see it goes around the top of the world – it is circumpolar

Slide 11. Types of Trees
In Alberta's boreal forest there are nine different kinds of trees that grow - 3 deciduous and 6 coniferous

Slide 12. The three deciduous trees are: answers on slide

Slide 13. The six coniferous trees are: answers on slide
We know it is pretty hard to tell them apart – so we are going to learn how to identify them.
But first you need to know:

1. What is a deciduous tree?
2. What is a coniferous tree?

Slide 14. What is a deciduous tree – answers on slide

Slide 15. What is a coniferous tree – answers on slide

Slide 16. Special tree in Alberta – answer on slide

Slide 17. How to Identify Trees

1. First of all, you need to download a book called "The Guide to Common Native Trees and Shrubs of Alberta" or you can buy copies from the Inside Education website.
2. You need to know certain terms so you can use the book properly – attached to this lesson plan is a "*Glossary of Terms*" so you can practice on your own
3. Terms you need to know are:
    1. Leaf arrangement
    2. Leaf type
    3. Leaf margins

Slide 18. Leaf Arrangement

So, we are going to see if you can identify some trees in the boreal forest.

But before we do, we need to go over some terminology- the first one is leaf arrangement. In the boreal forest, the most common ways leaves can be arranged on a tree are in two different ways - opposite from each other or arranged alternately along the branch. Our trees do not have whorled leaves but many plants with whorled leaves are all around us in the boreal forest.

Slide 19. Leaf Type

Then we have leaf type- the broadleaves we are concerned with are either simple or compound. With a simple leaf, there is only one leaf per stem (petiole) and a compound leaf will have several leaflets coming off the petiole. (Note how the general outline of the compound leaf looks like a simple leaf – also the leaflets do not have a stem)

For trees with needles they can be attached singly- individually off the branch, or bound together in bundles. If they are bound together in bundles than they are sheathed.

Slide 20. Leaf Margins

When we are looking at broadleaf trees a variety of leaf margins can be found. For example- a leaf can have fine, curved teeth, large coarse teeth or it can have a smooth margin.

Slide 21. What is the name of this tree?

And now that you are familiar with some terminology we are going to identify one of the broadleaf trees of the boreal forest together using this dichotomous key from the "Guide to Common Native trees & Shrubs of Alberta"

*** dichotomous means "two choices"

If you have the book in your hand go to page 9 – it looks exactly like the page on the screen. (If you do not have a book than just follow the choices on the screen.)

1. At the top of your book it gives you two choices – broadleaf or needle leaf – on the screen in the PowerPoint, it is cut off (in your book you will be able to see it) – *Answer: Broadleaf*
2. Now we must decide whether the leaves are opposite or alternate arrangement? *Answer: Alternate*
3. Then are we looking at a simple or compound leaf? *Answer: Simple*
4. Next, does the leaf have a smooth or toothed margin? *Answer: Toothed*
5. Then are the teeth fine or medium sized or large and coarse? *Answer: Fine or Medium*
6. Then are they fine or medium? *Answer: Fine*
7. And finally, are the teeth pointed or curved? *Answer: Curved*
8. We turn to page 13 and we find we have just identified a…….answer on next slide

Slide 22. *Trembling aspen*

When the buds open in the spring they reveal leaves that are oval shaped, with fine curved teeth and flattened stems. These flat stems cause the leaves to "tremble" in the wind, giving the tree its name.

The Trembling Aspen is a deciduous tree so it uses flowers and seeds to reproduce but because of the thin, acidic boreal soils, quite often these seeds never find appropriate conditions for optimal growth.

This tree therefore has adapted a different method of reproduction called suckering. The parent tree will send out shoots from its root systems that sprout up as young trees which are genetically identical to the parent. This suckering creates groupings of trees called "clones" – and all of the clones will have the same genes. These "clones" can be easily seen in the spring and fall as they will all bud, change leaf color and lose their leaves at the same time.

Another interesting thing about the trembling aspen is that its green bark contains chlorophyll which is used to photosynthesize or make food for the tree. This is one way that the tree has adapted to maximize its growth during the short growing season in the boreal forest.

Commercial uses of Aspen include pulpwood, plywood, wafer board, OSB, boxes, chopsticks and matches.

Slide 23. What is the name of this tree?

ID this coniferous tree together

1. It is needle leaf or broadleaf? *Answer: Needle leaf*
2. Are the needles sheathed or unsheathed? *Answer: Unsheathed*
3. Are the needles attached singly or in clusters? *Answer: Singly*
4. Are the needles 4 sided or flat in cross section? *Answer: 4 sided*
5. Go to page 21……you have just identified a ……. Answer on next slide

Slide 24. *White Spruce*

White spruce is an evergreen tree that can vary between 7 and 35 m in height. The young twigs will be smooth and shiny. Spruce needles grow independently from the branch and sprout from all sides ranging from 1-2.5 cm long.

The neat thing about spruce needles is that they are square, having four sides making it very easy to roll them between your fingers.

Spruce trees are highly adapted to living in the northern boreal environment.

- First of all, the needles have a small surface area which lessens moisture loss.
- Spruce trees have waxy needles which help to shed snow and prevent moisture loss.
- Their dark color is also an adaptation to maximize the absorption of the sun's rays.
- And because conifers keep their needles all year long they can begin photosynthesizing immediately in the spring.

Some Commercial uses include lumber, veneer, newsprint and resin today is also used for drugs and chewing gum

Here is an earth-shattering question for you!
Why do we use Latin names when naming flora and fauna around the world? For example: white spruce is Picea glauca and trembling aspen is Populous tremuloides.

Answer: Latin is a dead language (no one actually speaks Latin) Spoken languages change drastically over time and thus names would change in meaning. Latin never changes.

Slide 25. Practice identifying other trees using the link below:
https://lsfes.org/resources/trees-of-the-boreal-forest/

PART TWO

Slide 26. Natural and Human Uses of the Forest

Slide 27. What makes a forest?
What makes a forest? Allow for answers. Any answers are good.

Click to have the answers to appear.
Animals
Plants

Click to have answer appear.
Soil, moisture and sunlight
Forests need the soil and its nutrients, the sun to feed the plants, and moisture to help everything to grow!
Click to have answer appear

AND TREES
But the most important aspect of a forests are TREES!

click again
Without trees, it could not be a forest.

Slide 28. Who lives in the forest?
Who lives in the forest? Allow for answers.
Click to make photos appear.
Mammals, amphibians, birds, insects and plants all live in the forest.

Slide 29. And People
And people!
Allow for answers.

Click to allow the work and live photos to appear.
We use the forest for all sorts of different work including forestry, oil and gas, and mining. People also live in the forest.

Click – recreation photos will appear.
We also use the forest for FUN! This includes hiking, biking. camping, fishing, hunting, and all sorts of other activities. People are an important part of the forest ecosystem and can greatly influence forest health.

Slide 30. Different users
There are many people using the forest for different needs.

click for picture
Industry users are:

- Forestry
- Oil and gas
- Power and Electricity

click for picture
Wildlife includes:

- Birds
- Insects
- Amphibians
- Deer
- Moose
- Caribou
- Bears
- Wolves

- Coyotes
- Cougars
- Lynx
- Weasels
- Etc.

click for
Traditional uses include:

- collecting berries
- Tanning hides
- Hunting
- Trapping
- Medicinal plants
- Living off the land
- Etc.

click for picture
Recreation users are:

- ATV users
- Fishing enthusiasts
- Hikers
- bird watchers
- Hunters
- Trappers
- Mountain bikers
- Nature lovers
- Etc.

Slide 31. Indigenous People

Many people live in the forest and many of them have indigenous roots. It is important to remember that the boreal forest is vital to the culture and identify of indigenous people and their communities. Traditional use of forest resources provides their communities with food, clothing, shelter, medicine, ceremony and art.

Some traditional use resources are:

- Large game animals
- Plants and berries
- Fish
- Trees
- Fur bearing animals

Slide 32. Forest Managers

And then there are the people who take care of our forests who are called forest managers. The people of Alberta own the forests of Alberta. We need forestry professionals to manage our forests for us.

Forest Managers work in the Alberta Government, in Forest industry and other environmental organizations. When looking at a plan for a forest they need to look at all of users and figure out a way for everyone to get what they need.

For example, forest industry needs to cut trees down so we have lumber to build houses, paper for workbooks, chairs to sit on, pencils to write with, and of course we all need toilet paper!!

But after those trees are cut down we need to make sure that there are trees growing back – and we can do that by planting seedlings so a new forest can grow back.

Slide 33. Sustainable Forestry

For people working in forestry - sustainable forestry means ensuring more trees are being grown than are being cut down. How do we control this? The Government of Alberta regulates that the forest is harvested in a sustainable manner so that only a certain amount can be logged in any one year.

For example: imagine the graphic above is the province of Alberta – there are 100 trees in Alberta - we can only cut down one tree per year for the next 100 years. The tree in the red circle is the first tree we cut down - it represents 1% of the 100 trees in the province. If we cut that tree down and plant new trees – than in 100 years we should be able to go back to the tree in the red circle and harvest the area again.

Forest Managers are trained to look at the big picture when it comes to managing forests. They not only manage for the trees and the people that are working in the forest - they are also considering the soil, water, birds, mammals - everything that is in the forest land scape.

And it can all change in a heartbeat because they also need to consider natural disturbances such as insect, disease and wildfire which can change the makeup of a forest quickly!

Slide 34. Natural Disturbances

Natural disturbances can affect the management of forests. Some natural disturbances include:

1. Wildfire
2. Insect damage
3. Diseases
4. Wind and flood damage

Every time a natural disturbance occurs in the forest - forest managers have to rethink how they are going to manage the forest for all of its users

People are also an important part of the forest ecosystem and can greatly influence forest health as well.

How might people effect Forest Health?
(harvesting, human caused wildfire, quadding trails, other industrial activity, etc.)

Slide 35. Insects
There are many different types of insects that can damage a forest.

Who here has heard of the Mountain Pine Beetle before? The mountain pine beetles are able to cause large disturbances in the boreal forest by killing Pine trees.

Mountain Pine beetles like to lay their eggs on the same trees as other beetles and if an infestation of beetles is large enough, a tree can actually die within 1 month. Beetle Larvae are what cause the problem. Mountain Pine Beetles work into the middle of the tree damaging the route for nutrients and water flowing between the roots and leaves. The tree dies as it is not able to move nutrients and energy anymore.

There are many other insects that can damage trees in a forest – some common examples are – forest tent caterpillar, spruce budworm, and carpenter ants.

Slide 36. Diseases
Forest diseases are also common. Trees can get diseases just like people can get diseases. Common diseases that you might see are conks and burls – these are indicators that the tree is rotten inside, especially if there are many on one tree.

Forest diseases can attack any part of the tree – the trunk, leaves, needles, twigs, branches, and roots.

Forest diseases are a normal part of the ecosystem and aid in the decomposition of the dead and dying materials in a natural forest.

Slide 37. Wildfire
One of the biggest and most influential disturbances, in the Boreal Forest is wildfire. What is a wildfire? allow for answers.

click for image to appear
Wildfire is a fire that is destructive and spreads quickly over woodlands and grassy fields. Wildfire destroys almost everything in its path including homes and people.

Slide 38. Are wildfires good or bad?
Are wildfires a good or bad thing? What do you think? Let's start with the good things about fire. Who has some ideas? Allow for answers.

Click to reveal answers.

- *Wildfires are good because they allow the forest to regenerate or grow again.*
- *It releases all those nutrients trapped in dead material on the forest floo.r*
- *Often wildfires will increase the amount of food available for wildlife because new growth is starting up and seeds and nuts are released on to the forest floor.*
- *And it can help to control the insects and disease that we talked about earlier.*

Slide 39. Are wildfires good or bad?
What about the Bad Aspects? Allow for answers.
Click to reveal answers
Most of the bad aspects are related to humans:

- *it can be dangerous for people*
- *damages wood to be used in mills*
- *makes it hard to go camping.*
- *it can burn homes and buildings*

Click to reveal more answers

- *In the forest, very hot fires can actually damage the soil if a wildfire is large enough.*
- *And it can burn so much habitat that the animals may not be able to find everything they need to survive*
- *Smoke can make it very hard for animals and people to breathe*

Slide 40. How do wildfires start?
How do wildfires start? Who knows some causes? Allow for answers

click to reveal.

- *Wildfires will start naturally through lightning*
- *Other common causes of wildfire are from campfires that are not put out properly*
- *the brakes of trains*
- *powerlines causing sparks*
- *and dead plant material building up on the muffler of OHVs. (Off Highway Vehicles)*

Slide 41. Boreal forest and wildfire
Click to reveal picture
60% of the wildfires in Alberta are started through lightning.
The boreal forest actually needs fire – it a very natural part of the ecosystem.
When a wildfire happens is unpredictable. This is partly because there is so much FUEL available.
Fuel is anything that will burn – all that material that is built up on the forest floor.
Slow decomposition rates, disease, insects and low precipitation mean that there are large areas of dry fuel that can be started by lightning and feed the fire after it begins.

Click to reveal 2 more pictures
The plants, trees, and wildlife that live here have adapted to surviving after a fire.

Slide 42. What happens after a fire?
What happens after a fire?
Allow for answers.

Click to reveal pictures
The forest begins to regrow.

Slide 43. Wildfire is a natural part of the Boreal forest
Wildfire is a natural part of the Boreal Forest. As people living in the boreal forest, we need to be aware that our actions can quickly cause a wildfire that can spread very quickly. The boreal forest is a fire forest which means wildfire happens here all the time. Fire helps the boreal forest to stay healthy.

Slide 44. What phone number are you going to call?
ANSWER ON NEXT SLIDE

Slide 45. 310-FIRE

Slide 46. Natural, Renewable and Sustainable
After a fire the boreal forest renews itself. So, whether the forest has been logged or has a fire, or destroyed by insects and disease – the forest will regenerate because it is:

click 3 times
a natural, renewable and a sustainable resource.

Slide 47. Forests for future generations
There are many things we need to do in order to manage forests properly.

Click
It is a very complicated process but If we manage forests properly there will always be forests for future generations.

PART THREE

Slide 48. TREES AND FOREST QUIZ

Slide 49.
Answer: B- Boreal Forest

Slide 50.
Answer: F – all of the above

Slide 51.
Answer: D – broadleaf, leaves changes color and fall off in autumn, makes flowers or catkins

Slide 52.
Answer: A – Needle leaf, has cones, seeds are in the cones

Slide 53.
Answer: D – Tamarack, also called Larch

Slide 54.
Answer: F- all of the above

Slide 55.
Answer: C – Mountain Pine Beetle

Slide 56.
Answer: F – all of the above

Slide 57.
Answer: B – the people of Alberta – you and me!

Slide 58.
Answer: See next slide

Slide 59. LODGEPOLE PINE

Slide 60.
THE END

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Appendix A: Glossary of Terms

Alternate- Leaves placed singly at different heights along a stem

Compound leaf- A leaf with more than one leaflet per petiole

Lobed- A leaf with deeply indented margins

Opposite- Two leaves originating at the same point on opposite sides along a stem

Petiole – The leaf stem (between the twig and leaf)

Sheath- a clear tubular envelope at the base of a leaf

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Simple leaf- Only one leaf per petiole; a single bladed leaf

Smooth margin- Edge of leaf blade is smooth

Toothed margin- Edge of the leaf blade is serrated (has teeth)

Fine or medium sized teeth-

Large teeth on the **margin-**

Whorled-

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Appendix B: Products from Canada's Forests

Where does everything you use, every day come from? How important are the forests to your day to day living? Below is a list of everyday items you use. Check off all the items which are made completely or in part from forests or forest products. Have fun!

— Plywood
— Furniture
— Baskets
— Matches
— Toothpicks
— Drugs
— Varnish
— Glass cement
— Sugar
— Syrup
— Oils
— Glues
— Bath towels
— Leather
— Heating fuel
— Magazines
— Aluminum
— Shampoo
— Scribbler
— Barrels
— Handles
— Shingles
— Charcoal
— Tar
— Creosote
— Alcohol
— Acid
— Particleboard
— Pallets
— Briquettes
— Insulation
— Bedding for animals
— Flooring
— Toilet paper
— Doors
— Paper
— Iron
— Mop handles
— Dowels
— Ruler
— Lumber
— Mining timbers
— Railway ties
— Building Beams
— Boats
— Sporting goods
— Nail polish
— Musical instruments
— Farm tools
— Caskets
— Cabinets
— Boxes
— Cardboard
— Make up
— Wall paper
— Tissue paper
— Toothpaste
— Writing paper
— Books
— Wrapping paper
— Newsprint
— Plastics
— Road materials
— Cleaning fluids
— Polishes
— Paints
— Soaps
— Clothing
— Sandwich wrap
— Sausage
— Explosives
— Photographic film
— Shatterproof glass
— Sponges
— Water
— Imitation leather
— Artificial hair
— Hairbrushes
— Records
— LCD screens
— Hockey sticks
— Baseball bats
— Raincoats
— Molasses
— Fruit
— Insecticides
— Disinfectant wipes
— Ping pong balls
— Shoes
— Toothbrushes
— Nuts
— Christmas trees
— Turpentine
— Food additives
— Ice cream
— Chewing gum
— Skis
— Snowshoes
— Steel
— Medication

Appendix C: Direct Wood Products Box

Go to any home building store (i.e. Home Hardware, Home Depot, Rona, Lowes etc.) and ask them for left over wood products – they have scraps that they are going to throw away. You will need one sample of:

- OSB (oriented strand board) – strands (or chips) of wood oriented in different directions and pressed together
- Lumber (2x4, 2x6, or whatever size you like) you just need a small sample not the whole board
- Plywood – made with veneer (either 3,4,5 or 6 plies)
- Veneer – thin sheets of wood shaved from a log with a lathe – one sheet is not strong by itself but glue those sheets together oriented in different directions and it becomes very strong.
- And any other products that they may have

The only thing missing is a sample of pulp. Pulp is used to make paper products such as magazines, scribblers and toilet paper. Make your own easily by putting paper towels and water in a blender. Puree and drain water off. Voila pulp.

Appendix D: Ideas for a Hike in a Forest or Park

Go for a walk in a park or a nearby forest or any place where there is a variety of trees and shrubs. Take your "Guide to Common Native Trees and Plants" and practice identification on various trees and shrubs.

1. Find a Coniferous tree
    a. Identify it using the guide
    b. Ask students to name the parts of this tree?
    c. Ask students how this tree reproduces
    Answer: Cones and within the cones are seeds
    d. See if you can find some cones and look inside for seeds
    e. Look at the bark of the tree – it is smooth, rough, scaly, etc.

2. Find a Deciduous tree
    a. Identify it using the guide
    b. Ask students to name the parts of this tree?
    c. Ask students how this tree reproduces
    Answer: Catkins grow on trees in the spring and spread their seed around in the wind – also they will use suckering from their roots if there is a danger to them such as fire or logging.
    d. If it is the spring - see if you can find a catkin and look inside for seeds.
    e. Look at the bark of the tree – it is smooth, rough, papery, etc.

3. As you go along the trail and you find a different trees or shrubs – see if you can identify them. Practice using the dichotomous key as much as possible.

4. Find a place for students to explore safely and give them 3 – 5 minutes to find evidence of wildlife living in this treed area. Let the students know their boundaries. You may want to put up some flagging tape or some other marker on the boundary edge.

    Evidence could include:

    - *Scat*
    - *Tracks*
    - *game trails*
    - *nests*
    - *holes in trees*
    - *spider webs*
    - *browse from deer or moose*
    - *insects*
    - *squirrel cache (place where they store cones to eat later)*
    - *feathers hair*
    - *etc.*

    Gather students back and get them to tell you what they found.

5. Look at different leaf shapes along the trail – have kids identify the shape.

6. If possible, find another place for students explore or explore the same area again. This time they will be looking for different types of fungus (decomposers) in the forest. Fungus that is found on a live tree means that the tree is getting old or it has a disease. *(You can download the Grade 4 program form the LSFES website to see pictures of decomposers to help in identification)*

7. If you find a fallen tree, you can look at the roots of the tree and discuss if they are shallow roots or deep roots.

8. If you find a tree that is broken on the top - it is called a snag. You can ask students what this snag is good for in the forest?

   Possible answers:
   - *provides food for birds and other wildlife*
   - *lots of insects live in the decaying tree*
   - *owls like to make homes in the holes of the snag*

   Ask students what negative aspects the snag may have for the forest?
   Possible answers
   - because it is very dry it is fuel for a forest fire
   - it could fall down and hurt an animal or a human

9. At the end of your walk –ask students what are some of the human impacts on this forested area?

   Possible answers:
   - *Manmade trails*
   - *Powerlines*
   - *Picnic tables*
   - *Buildings*
   - *Seismic lines*
   - *Roads*
   - *Oilwell sites*
   - *Evidence of trees being cut down*
   - *Outhouses*
   - *Etc.*

10. As you walk around the park or forest, see if you can identify different types of ecosystems with students. For example, you might come across:

    Possible answers
    - *A treed area with just conifer trees or just with deciduous trees*
    - *A treed area with both conifers and deciduous trees*
    - *Pond or a marsh*
    - *Sandy area such as a beach*
    - *Lakeshore*
    - *Meadows or grassy areas*
    - *Lots of shrubs growing but no trees*
    - *Etc.*

12. After the hike, do a quick scavenger hunt to see what students can find:
    - *broadleaf*
    - *needle leaf*
    - *spruce cone or pine cone*
    - *fungus*
    - *evidence of wildlife*
    - *catkin*
    - *bark*
    - *alternate leaves*
    - *opposite leaves*
    - *sheathed needles*