



Saskatchewan Catholic Schools Curriculum Permeation

REVEALING CHRIST IN ALL WE TEACH

SCIENCE 1

2012

“Revealing Christ In All We Teach”

A Curriculum Permeation initiative of the Saskatchewan Catholic School Boards Association

Introduction:

“The Gospel spirit should be evident in a Christian way of thought and life which permeates all facets of the educational climate. Prime responsibility for creating this unique Christian school climate rests with the teachers, as individuals and as a community.” (*The Religious Dimension of Education in a Catholic School*, 1988 #25 -26.)

Teachers in Saskatchewan are mandated by the Ministry of Education to implement provincial curricula. Teachers in Saskatchewan Catholic Schools are further charged to utilize the “Revealing Christ in All We Teach” resources to permeate the Ministry curriculum with the Catholic world view.

Our Catholic schools seek to create a learning environment that reflects the identity and character of the Catholic Church. In each of our Catholic schools throughout Saskatchewan, we strive to become learning environments in which the uniqueness of our Catholic faith is expressed in all we do.

We believe that teaching in our Catholic schools is a ministry in which all are called to witness their faith. The teaching that occurs within our Catholic schools ought to reflect more than the content and objectives of the provincial curricula. In addition to these core fundamentals, we are called to infuse our Catholic beliefs and values in all subject areas.

In an ever-increasing secular world in which religious beliefs are dismissed, we must take up the challenge to see that the teaching of our Catholic values and beliefs are not limited to Religion and Christian Ethics classes alone, but are taught across the entire curricula. Our Catholic faith must permeate all subject areas! This undertaking is critical to the distinctiveness of Catholic education in Saskatchewan.

As Catholic educators, how do we permeate our Catholic teachings across the curricula? How do we, for example, discuss our church’s teachings on respect for the environment in science classes? How do we promote social justice in our studies of the humanities? How do we critique literary works through the eyes of our faith? In biology, how do we promote the sanctity of all human life, indeed, all of creation?

At the direction of the Saskatchewan Catholic School Boards Association, the following resource has been produced to assist teachers in the permeation of our Catholic faith across the curricula. A number of dedicated Catholic teachers in Saskatchewan have contributed to this resource by developing and sharing a variety of activities, lessons, and units for this purpose.

Please note: Teachers are invited to submit feedback and/or suggestions for additional faith permeation ideas to their Religious Education coordinator/consultant.



Science 1 Faith Permeation Essential Connections

Unit Theme: Needs and Characteristics of Living Things

In this unit students will learn about the needs of various living things. Students explore what needs plants, animals and people have to meet in order to survive. Through exploration and inquiry students discover, measure, sort, research and distinguish a characteristic that makes plants, animals and people unique.

Catholic Faith Focus for Learning:

In this faith unit students learn how each of God's creatures is special, unique and wonderfully made. A biblical example, the creation story, will help students learn how a people, the Israelites, might sort animals for various needs and uses. A second example, Noah's ark, becomes a springboard for lessons about stewardship.

Catholic Faith Big Ideas (answers to the essential questions):

Plants and animals are gifts from God.

299 Because God creates through wisdom, his creation is ordered: "You have arranged all things by measure and number and weight."¹⁵¹ The universe, created in and by the eternal Word, the "image of the invisible God", is destined for and addressed to man, himself created in the "image of God" and called to a personal relationship with God.¹⁵² Our human understanding, which shares in the light of the divine intellect, can understand what God tells us by means of his creation, though not without great effort and only in a spirit of humility and respect before the Creator and his work.¹⁵³ Because creation comes forth from God's goodness, it shares in that goodness - "And God saw that it was good. . . very good"¹⁵⁴ - for God willed creation as a gift addressed to man, an inheritance destined for and entrusted to him. On many occasions the Church has had to defend the goodness of creation, including that of the physical world.¹⁵⁵

The Church teaches that all things on earth are gifts from God, entrusted to us to be used wisely for all to benefit, for this generation and for future generations. This is the basic premise for stewardship.

2402 In the beginning God entrusted the earth and its resources to the common stewardship of mankind to take care of them, master them by labor, and enjoy their fruits.¹⁸⁷ The goods of creation are destined for the whole human race. However, the earth is divided up among men to assure the security of their lives, endangered by poverty and threatened by violence. The

appropriation of property is legitimate for guaranteeing the freedom and dignity of persons and for helping each of them to meet his basic needs and the needs of those in his charge. It should allow for a natural solidarity to develop between men. (CCC2402)

2415 The seventh commandment enjoins respect for the integrity of creation. Animals, like plants and inanimate beings, are by nature destined for the common good of past, present, and future humanity.¹⁹⁵ Use of the mineral, vegetable, and animal resources of the universe cannot be divorced from respect for moral imperatives. Man's dominion over inanimate and other living beings granted by the Creator is not absolute; it is limited by concern for the quality of life of his neighbor, including generations to come; it requires a religious respect for the integrity of creation.¹⁹⁶ (CCC 2415)

2416 Animals are God's creatures. He surrounds them with his providential care. By their mere existence they bless him and give him glory.¹⁹⁷ Thus men owe them kindness. We should recall the gentleness with which saints like St. Francis of Assisi or St. Philip Neri treated animals. (CCC2416)

2417 God entrusted animals to the stewardship of those whom he created in his own image.¹⁹⁸ Hence it is legitimate to use animals for food and clothing. They may be domesticated to help man in his work and leisure. Medical and scientific experimentation on animals is a morally acceptable practice if it remains within reasonable limits and contributes to caring for or saving human lives. (CCC2417)

2418 It is contrary to human dignity to cause animals to suffer or die needlessly. It is likewise unworthy to spend money on them that should as a priority go to the relief of human misery. One can love animals; one should not direct to them the affection due only to persons. (CCC 2418)

Catholic Faith Essential Skills:

- Students will understand how each of God's creatures is wonderfully made through the exploration of physical attributes in plants, animals and humans.
- Student will appreciate how people group and classify animals to meet their needs using biblical examples.
- By appreciating how wonderfully made God's creatures are, students will learn why and how it is necessary to protect these living things.

Catholic Faith Essential Questions:

1. How are animals, plants and people wonderfully made by God?
2. How did the Isrealites group living things?
3. What is stewardship and why do we need to protect living things?

Teacher Note:

These faith permeation lessons aim to follow and to complement two sources: Fully Alive (FA) and We Belong To God (WBTG). When these resources are referenced in following lessons and mini-lessons they will be abbreviated.

Lesson 1: How We are Wonderfully Made

Description: In this lesson students will explore the features of plants and animals in the classroom, schoolyard, in books, videos and internet. This lesson will help students will be able to observe the characteristics of living things, including plants, animals and people, which make up God's creation. They will be able to determine and record the basic needs of each specimen. At the end of the lesson students will see how all God's things have similarities and differences but that we're all wonderfully made.

Teacher Note: This unit correlates directly to FA Theme 1: 'Created and Loved by God'. Specifically this lesson works well if students have worked through topic 1 'Creation is a Gift from God', Topic 2 'We are God's Special Creatures' and Topic 3 'This is Me.'

This lesson also correlates too WBTG Theme 15, "God Takes Care of the world", theme 16 'God calls us by name'.

Provincial Curriculum Outcomes and Indicators Addressed:

LT1.1 Differentiate between living things according to observable characteristics, including appearance and behaviour.

- a. Use a variety of sources of information and ideas (e.g., picture books including non-fiction texts, Elders, naturalists, videos, Internet sites, and personal observations) to learn about observable characteristics of living things.
- b. Make and record observations and measurements about the observable characteristics of plants and animals using written language, pictures, and charts.
- e. Describe characteristics common to humans (e.g., eyes, ears, hair, and numbers of limbs and teeth) and identify variations (e.g., eye colour, hair colour, skin colour, height, and weight) that make each human unique.
- f. Compare observable characteristics (e.g., leaf, root, stem, flower, fruit, and seed) of plants of various types and sizes that live in different habitats.

Time to Observe and collect Plant specimens (30 min)

Materials Needed:

- Containers for
- magnifying glasses
- rulers

Instructional Procedure:

- Begin the class by describing how God created a world full of wonderful life forms and with the senses that God has given them, students will observe some of the animals and plants in the classroom and in the schoolyard.
- Review basic vocabulary such as needs and habitat with the students.
- Establish some appropriate guidelines with the students for observation of plants and animals in the school yard or in the classroom. Please note that students should be discouraged from removing plant

and animal life from the schoolyard. For the purpose of the day's lab students will collect only plant specimens that are already fallen or dead. For example, pine cones that have fallen, branches that lie on the ground. Remind the students that animal life shouldn't be harmed and will not be taken from school yard. Instead provide students with classroom materials, pets, preserved insects or live insects bought from the store. Often teachers can purchase live insects from pet stores.

- Take the students outside. Provide each student with materials to obtain a plant sample.

Research Stations (10-15 min. at each station, roughly 1 hour. Debrief, presentation and recording of information onto charts 30 min)

Materials needed mentioned below.

- Prior to the start of this section have large charts made of the examples below. On these charts students will add their findings.

Chart 1: Some parts that are same and different

Group	Partner's name and foot size	Partner's name and hand size	Partner's name and ear length

Chart 2: Plant characteristics

Group	Leaf length And shape	Root length and shape	Stem length and shape	Fruit length and description	Flower length

Chart 3: How we are different and alike

Partner's name	Eye shape and color	Hair color	Skin color	Weight	Height

Chart 4: Animal characteristics

One animal that you studied	Animal length	Animal shape

- When the collection is finished provide each student with a plant, animal and people research booklet.

- Describe the materials that students will find at each station. Explain to the students how they are to record their information into their research booklets. Show students how they will measure parts of their partner's bodies, parts of plants, and parts of an animal.
 - a) **Station 1:** students will measure parts of their partner's body. They will trace their partner's hand and foot. They will measure their partner's foot size, their hand length and their ear length.
Materials needed: rulers, 3 chair. (Correlates to activity 'This is my hand' black line master 4 theme 1, topic 3.)
 - b) **Station 2:** Students will measure and describe plant parts. The students will measure and describe a leaf, a stem, roots, a fruit, flower and seeds they have collected or that teachers have provided.
Materials needed: ruler, *a variety of leaves*, stems, roots, fruit and flowers.
 - c) **Station 3:** Students will describe their partner's eye shape, eye colour, hair colour, skin colour, height, and weight.
Materials needed: scale, eye shape identification chart, a measuring tape fastened to the wall. Correlates well to
 - d) **Station 4:** Students will measure and describe the size, shapes, color of a few animal specimens.
Materials needed: some preserved or live specimens or photos of scaled small insect specimens like worms, insects or fish.
- Divide students into pairs. Groups of three pairs may work at each station. The groups will rotate every 15 minutes clockwise.
- Students will complete their research booklet. It is advisable that teachers perform a demonstration of a measurement so that students may understand through observation before they begin the activity.
- Once the activity is done, reconvene the entire class. Have various students present and the teacher will record their findings into the chart.
- Close the class with a prayer of thanksgiving for God's gift of creation. This part works well with activity, 'The Gift of Life' blackline master 2 in FA.

*Thank you God for animals, plants and me
 Thank you for the birds, bugs, and trees
 Thank you for the sunshine, the rain, and the breeze
 Thank you for giving all things what they need
 Thank you for my hands, toes and feet
 Thank you for the mouth and teeth that help me eat
 Thank you that you made us wonderfully
 Amen.*

**** Alternative prayer 'We Thank You' black line master #3 theme 1, topic 2 FA**

Lesson 2: Sorting Animals and Plants

Description: In this unit teachers will use the creation account in the bible to describe how ancient people grouped the animals of Creation. From that example students will sort and class animals based on criteria that they develop.

Teacher Note: This unit offers areas of connection FA topic 1 'Creation is a Gift from God' and WBTG Theme 15, "God Takes Care of the world".

Provincial Curriculum Outcomes and Indicators Addressed:

LT1.1 Differentiate between living things according to observable characteristics, including appearance and behaviour.

c. Group representations (e.g., photos, videos, drawings, and oral descriptions) of plants and animals according to various student-developed criteria.

d. Engage in personal, scientific, and Indigenous ways of organizing understanding of living things

Required time: 1 hour

Materials needed:

- A large variety of photographs of trees, plants, grasses etc.
- A large variety of photos that depict land and aquatic animals
- 7 large Hula-hoops
- Poster paper
- Chart paper

Instructional Procedure:

- Begin the class by introducing the activity. Begin by saying, “Today we have a large variety of pictures. The pictures show different kinds of plants and animals. Scientists, people who study animals and plants, group animals and plants so they can easily study them. Other people from different parts of the world may also classify animals and plants differently too. These people may group animals to suit them. For example, farmers in Saskatchewan group types of plants that they grow. For example, they may grow wheat, barley, oats and canola. They group them together in a category called grain. Other farmers might grow apples, strawberries, raspberries and Saskatoon berries and call them fruit. Today we’ll look at ways different people grouped animals and plants to suit their needs; then you’ll get a chance today to group plants and animals based on your ideas. Let’s look at one example first.”
- Introduce account in genesis. Say, “The example we’ll look at first involves God’s first chosen people, the Israelites. They grouped animals and plants too based on their life as farmers, hunters and shepherds. We know that, because the way the Israelites, God’s people, believed that God made the world. We can read about it in the bible. On the third day, the bible says that God made the plants and on day five he made the animals. How did the Israelites group plants in the creation story? Let’s look... It says in the bible that God made seed plants and fruit trees. Can we group all of the photos of plants into the two groups mentioned in the creation story?”
- Place two hula-hoops on the floor and have students group all the photos of the fruit trees into one hula-hoop and the plants that bear seeds into another hula-hoop. Then when the students have finished discuss how the animals were grouped in the creation account: “Animals were created on the fifth day. Let’s see how they were grouped.”

- Read the creation account, “*And God said, ‘Let the waters bring forth swarms of living creatures, and let birds fly above the earth across the dome of the sky.’ So God created the great sea monsters and every living creature that moves, of every kind, with which the waters swarm, and every winged bird of every kind. And God saw that it was good. God blessed them, saying, ‘Be fruitful and multiply and fill the waters in the seas, and let birds multiply on the earth.’ And there was evening and there was morning, the fifth day.*

And God said, ‘Let the earth bring forth living creatures of every kind: cattle and creeping things and wild animals of the earth of every kind.’ And it was so. God made the wild animals of the earth of every kind, and the cattle of every kind, and everything that creeps upon the ground of every kind. And God saw that it was good.

- Ask, “What kinds of groupings were there?” Answers that students provide should include: birds (or animals that fly), great sea monsters (sharks, whales, octopus etc.), every living creature, that moves, things that creep on the ground (snakes, worms, insects) and cattle (herds maybe sheep too?).
- Have student put pictures of animals into those categories. Have students use one hula-hoop for each grouping.
 - a) Animals that fly:
 - b) Things that swim:
 - c) Great sea monsters:
 - d) Things that creep on the ground
 - e) Cattle or herds
- Have students examine the groupings they have made. Ask, “What kind of jobs did the ancient Israelites have based on they grouped the animals in the creation story. For example, they mentioned cattle, therefore, if they mentioned cattle they must have been cattle herders. In other words, they looked after cows.”
- Students should suggest: fish and sea monsters (fisherman), cattle (herders), things that fly or creep (hunters).
- For interest, query the children about the sea monsters. Ask “What could they be?” Likely the sea monsters were things that they fished out of the sea and didn’t look like fish. However, students may suggest Lochness monsters or even aquatic dinosaurs.
- After debriefing the biblical classification activity, have student suggests categories of their own for the photos of both plants and animals. Then as a classroom decide on some categories and have the students sort the photos according to their own categories. Write these categories on chart paper.
- For a summary activity, have students create a poster depicting the day and the fifth day of creation. Have students entitle their posters, “Sorting animals based on the bible”. In their posters students should have the categories as described in the creation account: Plants that bear seeds, fruit trees, animals that fly, swim, creep, cattle, sea monsters!

Lesson 3: Noah was Busy

Description: In this activity students will distinguish and investigate characteristics of animals that make each one unique through the story of Noah's ark. Students will use teacher selected resources, internet websites, books to complete their investigation.

Teacher Note: This unit offers areas of connection FA topic 1 ‘Creation is a Gift from God’ and WBTG Theme 15, “God Takes Care of the world”.

Provincial Curriculum Outcomes and Indicators Addressed:

LT1.1 Differentiate between living things according to observable characteristics, including appearance and behaviour.

c. Group representations (e.g., photos, videos, drawings, and oral descriptions) of plants and animals according to various student-developed criteria.

d. Engage in personal, scientific, and Indigenous ways of organizing understanding of living things

Required time: 3 hour

Materials needed:

- Large poster paper
- Teacher selected resources like internet websites, books, photos, magazine etc.
- Handout, “Noah was Busy.”

Noah was Busy (1-3 hours)

Instructional Procedure:

- Prior to the start of the lesson, teachers may wish to illustrate a large ark onto which students will paste their animal findings.
- Describe or read ‘Noah’s ark’ to the students. Teachers may have their preference in children’s book or readings from a children’s bible that they may wish to use.
- Teachers may wish to use songs, such as Shel Silverstein’s ‘Unicorn’.
- As teachers finish reading the story or as the class finishes listening to the song, ask the students, “How did Noah recognise all those animals? Did you know there are between 3-30 million kinds of animals? Noah must have been an animal scientist! In today’s activity we’ll help Noah identify some animals that we can put on our picture of the ark.”
- Review several key terms with the students before beginning. Key terms like characteristics, needs, social groupings (herds, flocks, schools etc.), habitat.
- Provide a table of resources, (classroom materials, pets, video of animals, books and magazines) or computer access to teacher chosen sites. Provide time for the students to

investigate the animals and to record their findings in the hand outs ‘Student Findings: Noah was Busy’

- An alternative method is that teachers may preselect various different animals for the students, complete with pictures and information. Students may then disperse to various stations to do their research.
- When the research is complete, have students report their findings to the class.

How Is My Animal Special ?(30-40 min)

- Draw the students’ attention to the ark they have created and the animals that were saved. Pose the question, “Why did God save two of every kind of animal?”
- Invite student responses. Discuss how each kind of animal is a gift and special to God and that’s why a pair of each was spared. God also made a promise to people and all the animals in the world that He’d never destroy it again. Explain that today people are harming the world with human activities such as burning fossil fuels and polluting the environment.
- Explain to the students that it is very important today we become like Noah, good caretakers of animal and plant life.
- Have each student reflect on the animal they have chosen from the previous activity: Noah was busy. Provide each child with a reflection activity: How is my animal special?
- Read through the activity with the entire class. Have students respond to the question, “How can I be good caretakers of the animals, mother earth and God’s creation.”
- Brainstorm a list with the students. Have students write down some of these ideas. Once the class has completed decide on some goals that are attainable. Put those goals down on strips of paper. Place these strips into a jar and each week select a goal that the classroom could do. For example, recycle, leave plants and animals alone in their habitat, walk my pet etc.

Animal Finding: Noah was Busy

Noah was Busy. There was a giant flood coming. He had to build huge boat, called an ark. But the hardest job was to find the millions of animals to find. How did he know where to look and what to catch? This is how you’ll help. You’re going to research some animals that Noah can put on his ark. With a friend you will:

- a) draw a picture of the animal you choose
- b) find out about its needs like food, water, shelter
- c) Describe where it lives.

Name of the animal I am reaching is called:

To help Noah identify my animal, here is how it looks:

To find my animal Noah needs to know where my animal lives.
My animal lives in _____.

So that Noah can bring the right things for my animals to live on the ark, I found out that my animal needs:

Some special features or characteristics about my animal are:

One special thing I like about my animal is: _____

Activity: How is my animal special?

How is my animal an important part of God's creation?

Noah's ark happened long ago but he saved the animals. Today animals are getting hurt and dying too. How can I take care of my animal, mother earth and God's world?

Appendix A: Table of Correlation

Faith Permeation lesson Documents	Outcome and Indicator	Catechism of the church	Gospel/ biblical references/ Church documents and encyclicals	Christian Ethics resources
Lesson 1 How We are Wonderfully Made	LT1.1 a,b,e,f	299, 2402, 2415,2416, 2417, 2418	Genesis 1 1 st Vatican Council, chapter 1On God the Creator of All Things. Summa Theologica St.Thomas Aquinas	FA Theme 1: 'Created and Loved by God' topic 1 'Creation is a Gift from God' topic 2 'We are God's Special Creatures' topic 3 'This is Me.' WBTG Theme 15, 'God Takes Care of the world', theme 16 'God calls us by name'.
Lesson 2: Sorting Animals and Plants	LT1.1 c, d	299, 2402, 2415,2416, 2417, 2418	Genesis 1 1 st Vatican Council, chapter 1On God the Creator of All Things. Summa Theologica St.Thomas Aquinas	FA topic 1 'Creation is a Gift from God' and WBTG Theme 15, 'God Takes Care of the world'

Lesson 3: Noah was Busy		299, 2402, 2415,2416, 2417, 2418	Genesis 1 1 st Vatican Council, chapter 1On God the Creator of All Things. Summa Theologica St.Thomas Aquinas	FA topic 1 ‘Creation is a Gift from God’ and WBTG Theme 15, ‘God Takes Care of the world’

Science 1 Faith Permeation Essential Connections

Unit Theme: Using Our Senses

From a science perspective, in this unit students explore how living things such as people and animals employ their senses to survive and live in their environment. Students will also investigate how people and other living things interact in their environments by using their senses.

Catholic Faith Focus for Learning:

In this unit from a faith perspective students learn how God has given people the five senses to explore their environment. Some activities are designed to allow students' the chance to appreciate and give thanks to God for the gift of senses. Students will also learn about Bartimaeus the blind man whom Jesus healed and look to Jesus in that gospel account, as a model of compassion.

Catholic Faith Big Ideas (answers to the essential questions):

- Because we are made in the image of God, our bodies are temples of the Holy Spirit. Our senses are the means by which we understand the world around us, and live fruitful and holy lives. We use our senses not simply to know the world but also to know, love and serve God.
- We can give thanks to God for our bodies and its senses in many ways. We may show our gratitude through prayer and through song. We may show respect for God's gift of the senses through how we treat our bodies.
- Christ is the template on which we must model our compassion for people who have disabilities. In Mark 10: 46-52, Christ's act of compassion for the blind man Bartimaeus contrasts the regard that people of his time had. Like Him, we must extend great compassion for those who have different capacities. The Catechism states, “Those whose lives are diminished or weakened deserve special respect. Sick or handicapped persons should be helped to lead lives as normal as possible. (CCC2276).

Catholic Faith Essential Skills:

- Students will be able to describe how God's gift of the senses helps people learn about and explore our environment.
- Students will be able to express how we give thanks for God's gift of the five senses.
- Students will learn how Jesus is the model of compassion for people with disabilities.

Catholic Faith Essential Questions:

- 1) How do we use God's gift to explore our world?
- 2) How can we show our appreciation for God's gift of the senses?
- 3) How can we treat others who have disabilities?

Lesson 1: Exploring with the Senses

Description: In this lesson students use their five senses to explore an array of different natural and artificial items. The lesson aims to help inspire a natural awe and wonder in the students when they experience God's creation

Teacher Notes:**Provincial Curriculum Outcomes and Indicators Addressed:**

Outcome: SE1.1 Investigate characteristics of the five traditional external senses (i.e., sight, sound, smell, touch, and taste) in humans and animals.

- a. Identify each of the senses and associate those senses with parts of humans or other animals, including sight and eyes, smell and nose, hearing and ears, taste and tongue/nose, and touch and skin.
- b. Identify characteristics used to describe the range of observations related to each sense (e.g., sounds can be described as loud or soft, high pitch or low pitch; tastes related to the tongue can be described as sweet, sour, salty, or bitter; textures can be described as hard or soft, smooth or rough, sticky or not sticky; smells can be described as musky, aromatic, pungent, or putrid; and appearance can be described in terms of shape, colour, and lustre).
- c. Categorize foods as sweet, sour, salty, or bitter, and compare results with others.
- d. Sort objects and materials according to characteristics (e.g., colour, shape, texture, odour, sweetness, and loudness) related to one or more senses.

Outcome: SE1.2 Explore how humans and animals use their senses to interact with their environment.

- a. Pose questions that lead to exploration and investigation of human and animal senses.

Required time: 2 hours total

Exploring God's Creation With Our Senses (1 hour)

Materials needed:

- A large variety of natural and artificial items to explore
- Classroom materials such as pictures, photos or posters of the five senses
- White lab coat
- Some science props such as beakers, goggles etc.
- List of sense words and ideas to help students record their observations. For example, sweet, sour, hard, soft, colorful, etc.

Instructional Procedure:

- Begin the class dressed as a scientist. Ask the students, "I am dressed as a very special kind of explorer. I explore God's creation using my senses. Who am I?"
- If teachers are unable to dress up and use props, teachers may show a picture of a scientist.
- The students may be able to provide the answer scientist.
- Ask the students, "What is a scientist?" Jot down on chart paper a list of their answers.
- Explain to the students that God gave people gifts to be scientists. What are some of the gifts that God has given to people to learn about the world?"
- Help the students flesh out the idea that a good scientist uses gifts that he\ she has from God to explore and study the natural world. Lead the students to understand that scientists are people who study the world but they do it with the gifts that God gave them. These gifts are eyes to see with, ears to hear with, nose to smell with, mouth to taste and to describe what they see, a brain to think with, curiosity to ask questions, and hands to touch with and to explore with.
- Explain to the students that today they will be scientists required to use the gifts that God gave them to explore the items that the teacher has prepared.
- "How will you explore these items? How do you learn about something new? For example, when we eat something new our senses tell us what we need to know. "What does your nose tell you? What do your taste buds tell you? What do your eyes tell you about this new food?"
- You may need to give some additional examples so that the students understand. For example how would one explore a new place? One might see it first, take in the smells, appreciate various textures in that environment, describe it colors. Then one might compare what one has eaten to a food previously known.
- Present students will a variety of items. Explain to the students that some types of items are for tasting while others are not.
- Indicate to the students a list of words and ideas that they can use to describe what they sense during their exploration. Post these word lists before the exploration.
- Provide each pair of students with a clip board and a handout 'Exploring God's Creation with Our Senses'.
- On the handout students will write down the name of the object they explore. They will record what it looks like, taste like (if applicable), smells like, feels like etc.

- Direct students to use their word lists to help them describe their observations.
- Allot 20 minutes for students to complete this activity.
- After the students have done their exploration activity in the lesson above, have the students share their findings as a classroom.
- Have the students sort the various items students found by texture, smell, sight, sound, etc.
- Discuss ways that students have grouped their items and why they have classified them that way. ex. Things that are sweet, things that are shiny etc.,
- Close the class with a prayer
- In this prayer students will write down one thing for which they sense and are thankful.

A prayer for the Senses

Thank you God for my _____ that help me smell.

Thank you God for my _____ that help me see.

Thank you God for my _____ that help me touch.

Thank you God for my _____ that help me hear.

Thank you God for my _____ that help me taste.

Thank you God for _____ which I can see with my eyes

Thank you God for _____ which I can smell with my nose

Thank you God for _____ which I can touch with my skin

Thank you God for _____ which I can taste with my tongue

Thank you God for _____ which I can hear with my ears

Thank you God for the senses to worship you with. AMEN

Activity: Exploring God's Creation with Our Senses

God has given five senses to explore the world. I am wonderfully made. I can use my five senses to explore.



I taste with my _____.

The object I tasted is a _____.

Three words that describe my object are:

_____, _____, _____, and
_____.

I see with my .

The object I see is a _____.

Three words that describe my object are:

_____, _____, _____, and
_____.



I explore with my _____.

The object I explore is a _____

Three words that describe my object are:

_____, _____, _____, and
_____.



I explore with my .

The object I touch or feel is a _____

Three words that describe my object are:

_____, _____, _____, and



I explore with my .

The object I explore is a _____

Three words that describe my object are:

_____, _____, _____, and

How Can We Worship God with Our Senses? (1 hour)

Teacher notes: Prior to the start of this activity teachers will need to create a few important charts. Teachers will make a chart in the shape of each sense on to which students will post their ideas.

Materials:

- Illustration of the five senses. Under each illustration write, “I can worship God by....”
- markers

Instructional Procedure:

- Prior to the class, post an illustration of each sense. Review each of the senses with the students.
- For this activity teachers may wish to bring in elements that students can feel, see, smell with their senses. For example it might be important to have a candle present so that students may see the light and feel the heat from the candle. Teachers may wish to have holy water present for students to feel when they make the sign of the cross. Teachers may have bread present for students to taste, to symbolize the host they see at mass. *Note: Please carefully explain the difference between the bread the students eat during class and the host used during communion.*
- With these aids teachers may help students understand how we worship God with our senses.
- Ask the students to think about how they can use these senses to worship God. Ask, “How can we worship God with our senses?” It might be necessary to define what worship means with the students. Students may have difficulty with this idea. Teachers may explain worship as a way with speak with God with our words, our hearts, our bodies. Another way to help students understand how we might worship God with our senses is to ask these questions:
 - a) How do our eyes help us to pray to God? To thank Him? To show him we our Love?
 - b) How do our ears help us to speak to God, to thank Him?
- Brainstorm a list of ways that students can use their senses to worship God.
- Some reasonable answers include:
 - a) Using our tongue and mouth to eat the host during communion
 - b) Using our ears to hear the word of God
 - c) Touching the wood of the cross when we venerate the cross.
 - d) Feeling the heat of a candle during baptism
 - e) Feeling the hard backs of the pews during a celebration
 - f) Shaking hands during the sign of peace
 - g) See all the people around us during worship
 - h) Smelling incense during mass.
- Record the student’s answers on chart paper. Then have the students write down one way they can worship God with their senses and post them on the chart illustration that teachers have posted around the room.
- Close the lesson with a song of the teacher’s choice, have students worship God with their senses. Teachers may wish to modify ‘Farmer in the Dell’.

Ex. God gave me eyes to see.

God gave me eyes to see.
Thank you Jesus
God gave me eyes to see

God gave me a nose to smell

God gave me a nose to smell

Thank you Jesus

God gave me a nose to smell

- Some teachers may wish to use the following video for the worship song, “Open the eyes of my heart.” <http://www.youtube.com/watch?v=iMn8vdIcwJE>

Lesson 2: God Teachers me to See and to Hear

Description: In this lesson students learn from two bible stories what it means to see and hear.

Teacher Notes: This unit correlates with FA Theme 1: ‘Created and Loved by God’, topic 3 ‘This is Me.’

This lesson also correlates too WBTG Theme 15, “God Takes Care of the world”, theme 16 ‘God calls us by name’.

Provincial Curriculum Outcomes and Indicators Addressed:

Outcome: SE1.2 Explore how humans and animals use their senses to interact with their environment.

- d. Imagine, and compare with others, possible sensations that students would likely experience in other environments based on representations (e.g., stories, pictures, and videos) of those environments.
- f. Assess the function of aids (e.g., glasses, hearing aids, raised Braille alphabet, sign language, and guide dogs) that support peoples’ differing abilities to sense their environment.
- g. Experience changes in ability to explore the environment after the simulated loss of one or more senses (e.g., blindfold, earplugs, nose clip, and socks over both hands).
- h. Suggest how a human or animal might function if they were totally or partially missing one or more of the five senses.

Required time: 2 hours total

Materials needed:

- A children’s bible
- Blind folds
- Nose plugs, socks
- CAUTION: virus and bacteria may be transmitted if teachers have students share ear plugs.
As a result, ear plugs are not recommended for this activity.

Instructional Procedure:

- Introduce the class by asking for volunteers.
- Once a volunteer comes forward have him or her sit in a chair at the front of the classroom. Explain the activity to the students, “There are people in the world born missing a sense or lose a sense later in life. We can become blind, deaf, lose our sense of smell or touch. Today we’re investigating what it is like to miss one or more of our senses. Our volunteer is going to help us with a little activity.”
- Have the volunteer place a blindfold over his\her eyes. Ask the student to describe what they see. Into the students hands, place a strange object and ask the student to describe it.
- While the classroom looks on, write down a list words that the student uses to describe the object.
- Reveal the item after you ask students to open his\her eyes.
- Explain to the students that this would be their reality if they couldn’t see. Ask, “What other qualities about the about the object that our volunteer couldn’t tell us because of the blindfold?”
- Through directed questions help students to arrive at answers like color, design, hues, writing.
- Help students understand that this would the reality of a person who is blind. Explore ways that life might be different for a person who can’t see. Discuss their challenges as class.
- State, “Today there are technologies that we have to help people who can’t see such as brail writing to allow them to read and seeing-eye dogs who help guide past dangers. But, in the time of Jesus, the blind didn’t have these technologies. Their life was very different and very hard. Let’s read the story of Bartimaeus in the gospel of Mark to understand what his life might have been like and to see how Jesus treats those who are missing their senses.”
- Gather the students together near a prayer corner to listen to the biblical account of the blind man to learn how Jesus has compassion for Bartimaeus and heals him in the gospel of Mark 10.
- Ask, “In the gospel of Mark we learn about Bartimaeus the blind man. People like Bartimaeus could not work. Since they could not work they had to beg for money. How might we treat people who may have the loss of sight?” Follow that discussion with further questions, “How might we feel and how should we treat others?” Teachers may wish to refer to unit 1 of WBTG theme 1 in which students participated in welcoming activities for the beginning of the school year. In the development of that theme teachers led students feel welcomed in the activities ‘Off to School’ or ‘A circle of Welcome’. Teachers may wish to discuss or review those activities in light of a disability. Teachers may wish to discuss how the classroom might make a person with a disability feel.
- After the discussion, have them imagine activity they love best.
- Have students then imagine what it might be like to do that activity without the help of their eyes.
- Ask, “How would the activity change? What challenges might there be?”
- Have students draw or write the answer to the question posed above.
- In an extended activity, teachers may wish to have an assortment of items that students may explore. Have students try on nose plugs, socks over their hands and blind folds while they

touch, feel, smell various objects. Have students share with a partner what it feels like, smells like, looks like and hear like.

Appendix A: Table of Correlation

Faith Permeation lesson Documents	Outcome and Indicator	Catechism of the church	Gospel/ biblical references/ Church documents and encyclicals	Christian Ethics resources
Lesson 1: Exploring with Senses	SE1.1a,b,h,i SE1.2 a	2276		FA Theme 1: ‘Created and topic 3 ‘This is Me.’ WBTG Theme 15, ‘God Takes Care of the world’, theme 16 ‘God calls us by name’.
Lesson 2: God Teachers me to See and to Hear	SE1.2 d,f,g,h	2276	Mark 10: 46-52	FA Theme 1: ‘Created and topic 3 ‘This is Me.’ WBTG Theme 15, ‘God Takes Care of the world’, theme 16 ‘God calls us by name’. WBTG: Theme 1 ‘Welcome!’

Science 1 **Faith Permeation Essential Connections**

Unit Theme: Using Objects and Materials

This unit does not genuinely lend itself to faith permeation. However teachers are encouraged to help students understand that any natural material is made by processes created by God and that we are grateful for the results of His Creation.

Science 1 **Faith Permeation Essential Connections**

Unit Theme: Seasons

In this unit the students consider ways that people represent and mark changes in natural phenomena with the passing of the seasons and time. They will learn to measure and observe these changes. Lastly students explore how plants and animals adapt to those changes.

Catholic Faith Focus for Learning:

The faith focus for this unit concerns the first outcome, how people represent seasonal and daily changes. This faith unit will be concerned with the concepts of liturgical seasons and calendars as the way Catholic represent seasonal and daily changes.

Catholic Faith Big Ideas (answers to the essential questions):

- The Catholic liturgical seasons and calendars are determined by tradition and through papal decrees. They consist of feast days, cycles of annual readings and sacred seasons in church life. The seasons within the catholic faith consists of Advent, Christmas, Ordinary time following the Christmas season ending with the feast of the Baptism of Christ, Lent, Easter and ordinary time after Pentecost. The liturgical seasons are not influenced so much by changes in the natural seasons. However the liturgical year is influenced by Jewish tradition whose calendar is based on lunar events. Hence Passover falls on the first Saturday after the first vernal full moon. Easter falls on the following day.
- For First Nations, seasons are determined by natural changes. Natural events that occur in the environment determine the length of a season. Hence a winter can be long. Spring doesn't start until the first lightning strikes to herald the first rains. Length of days, equinox and solstice also help set time and seasons. Calendars are influenced by local natural phenomenon such as the moulting of the geese, migration of herds, frost on the trees etc. Among the northern groups such as the Dene or Northern Cree, freezing and thawing of the ice constitutes two additional seasons. In such seasons different tasks are undertaken to ensure survival.
- From a western perspective, especially those that rely on the Gregorian calendars, the dates of seasons are set by the dates of equinoxes and solstices. Although based on different climes, there could be snow on the ground at the start of spring. Seasons may be useful ways to divide the year and to mark the passing of time but changes in natural events are also needed to gage how seasons change.

Catholic Faith Essential Skills:

- Students will be able understand how different groups of peoples within the Catholic faith and people within First Nations cultures represent the seasons through their perspective. Students will learn how First Nations people represent the seasons through the medicine wheel or hoop and their respective calendars.
- Students will compare and contrast three different perspectives on ways to represent the seasons: a scientific, a Catholic liturgical and a First Nations.

Catholic Faith Essential Questions:

- 1) How are the seasons represented in science, from a Catholic perspective and from a First Nations Cultural worldviews?
- 2) How do representations of the seasons from these three views, (scientific, Catholic faith and First Nations) compare and contrast?

Lesson 1: Seasons and Calendars among in First Nations cultures, in Science and Faith

Description:

In this lesson students will compare and contrast ways that the seasons are represented from the First Nations, Catholic and scientific perspectives. Similarly students will examine how the natural seasons shape the way they are represented in First Nations cultures i.e medicine wheel, lunar calendars and four directions, compared to the way seasons are viewed in the Catholic church. Lastly, students will examine how our calendars might compare with the Church liturgical calendar and First Nations calendars.

Teacher Notes: These seasons of Liturgical calendar are a strong focus in WBTG. Unit 4 ‘God Dwells Among Us’ themes 10-12 explore advent and its meaning while Unit 5 themes 13-15 students celebrate the joy of Christmas. Theme 19 of unit 7 explores the meaning of Lent. Easter and the resurrection form the topics in Themes 25 and 26 of WBTG. Teachers may wish to references and review ideas from these themes to the content within these lessons.

Required time: 1 hour

DS1.1 Compare and represent daily and seasonal changes of natural phenomena through observing, measuring, sequencing, and recording.

- d. Examine ways in which various cultures, including First Nations and Métis, represent daily and seasonal changes through oral traditions and artistic works.
- h. Sequence or group objects, materials, and events according to one or more attributes related to daily and/or seasonal changes (e.g., group pictures by season, sequence activities according to time of day, group clothing items by season, and sequence stages of garden growth).
- i. Create visual or physical representations of differences in natural phenomena at different times of the day and/or year

Materials:

- Handouts
- Chart papers
- Markers
- Liturgical calendar

Instructional Procedure:

First Nations Seasons (30 min.)

- Review the four seasons with the class. Have the students describe aspect of each season.
- Introduce the seasons from a First Nations perspective. Describe how many First Nations people view the seasons as cyclic. This cycle can be represented by the medicine wheel or the four directions teachings. Originally the medicine wheel teachings originated from the states but were adopted by some communities in Canada. Not all communities in Saskatchewan have medicine wheel teachings but all of them recognize the importance of the four directions and their associated teachings. For example, most Cree and Lakota\Nakawé communities recognize only the four direction teachings. The plains Ojibwe or Nakawé have medicine wheel teachings. Among other Cree and Dakota elders the sacred hoop or the four directions teachings are used instead. It is also important to note that medicine wheel teachings will vary from elder to elder and from community to community.

According to some medicine wheel teachings or the four direction teachings, North represents old age, wisdom, spirit and winter (white). East represents new life, early infancy, growing bodies and change, spring (yellow in color). South is symbolic of adolescent, growth in emotions and summer (blue or black depending on the tribe. Blue is used by the Cree for example while black is used by the Blackfoot in Alberta). Lastly, the western quadrant represents fall, adulthood, growing in wisdom and mind (red). (Note: the blue and the red quadrant colors can be switch; it simply depends on the elder and tribal group.) Remember that there isn't truly a pan-First Nation teaching that encompasses all. These teachings vary from culture to culture, reserve to reserve, elder to elder.

Information about the medicine wheel teachings, four directions teachings and the seasons are found in the links below:

- <http://www.allnationshope.ca/Resources/Medicine%20Wheel%20Booklet%20reduced.pdf>
http://www.iisd.org/7thgen/healing_circle.htm
<http://www.sacsc.ca/Lesson%204-History%20of%20Healing%20Wheel/The%20Story%20of%20the%20Medicine%20Wheel.pdf>
http://ourspace.uregina.ca/bitstream/10294/1142/1/Aboriginal_Perspectives.pdf
<http://partial2zen.com/wp-content/uploads/2011/06/CreeTeachingsHandbook.pdf>
<http://www.fourdirectionsteachings.com/>
- If the season is appropriate, often in the winter only, teachers may tell traditional first nations stories about the seasons. These stories may be published or given to the teacher by a knowledge keeper or elder.

This link to http://www.ucalgary.ca/applied_history/tutor/firstnations/dene.html provides the dene story of summer and winter.

A collection of stories about weather and seasons:

http://www.wdm.ca/skteacherguide/SICCResearch/FNWeather_TeacherGuide.pdf

Note: In some first Nations communities, according to traditional protocol, it is appropriate to tell traditional stories only in the winter season. Please check with your local community.

Here is a link to story books for purchase written around First Nations and seasonal themes. These are not traditional stories and may be read any time.
http://www.strongnations.com/store/item_list.php?it=3&cat=1136

- Describe events in nature that First Nations people use to distinguish the changing seasons.
For example:

Typically spring occurs with the first rains. When thunder is heard for the first time, elders describe the return of the thunderbird, a large spiritual creature which makes lightning and thunder. The great thunderbird heralds the start of spring. Birds and other animals return from their winter migrations and move to nesting grounds and dens. Plants rejuvenate and begin to blossom and grow. Eggs are laid in late spring and hatchlings of various kinds are observed.

NOTE: Be sure to emphasize that four seasons isn't the experience for all First Nations people. The Dene and the Northern Cree in Saskatchewan describe six seasons in the year. In addition to the four seasons, they experience break-up of the winter ice, and freeze up of the lakes are two additional seasons.

Some websites that helped describe the four seasons are:

<http://publications.gc.ca/collections/Collection/R32-195-1998E.pdf>
<https://www.stf.sk.ca/portal.jsp?Sy3uQUhbK9L2RmSZs02CjV/LfyjbyjsxssfEZJZhE4gE=F>

- Provide each child with a handout of a blank medicine wheel. In each of the quadrants students will illustrate symbols or ideas that pertain to the events that First Nations people experience during each season.

*How First Nations Seasons, our view of seasons and liturgical seasons are similar but distinct
(30 min-1 hour)*

Instructional Procedure:

- Show the names of a First Nations calendar, which is a lunar calendar. Describe for the students how a lunar calendar works. If possible show the following websites which illustrate a lunar phase.

There are three great calendars in both Dene and Cree languages on pg. 2 of appendix A of the following document. The document also contains background knowledge about Julian and Gregorian calendars:

http://www.usask.ca/education/ccstu/pdfs/night_sky.pdf

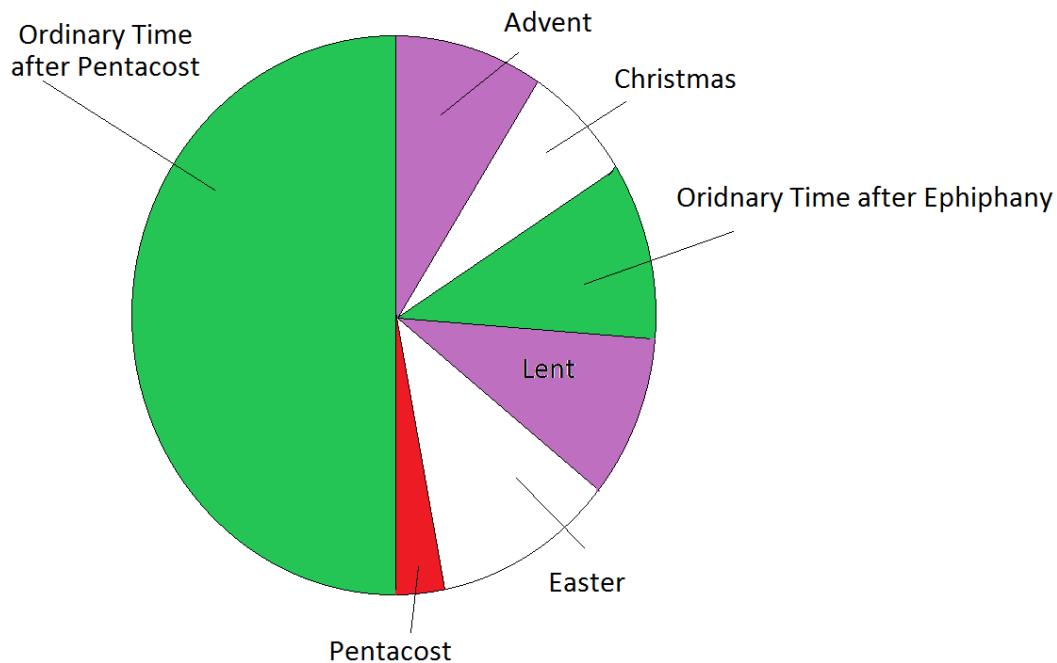
Saulteaux calendar:

<http://beginnerssaulteaux.wordpress.com/2011/01/16/lunar-calendar/>

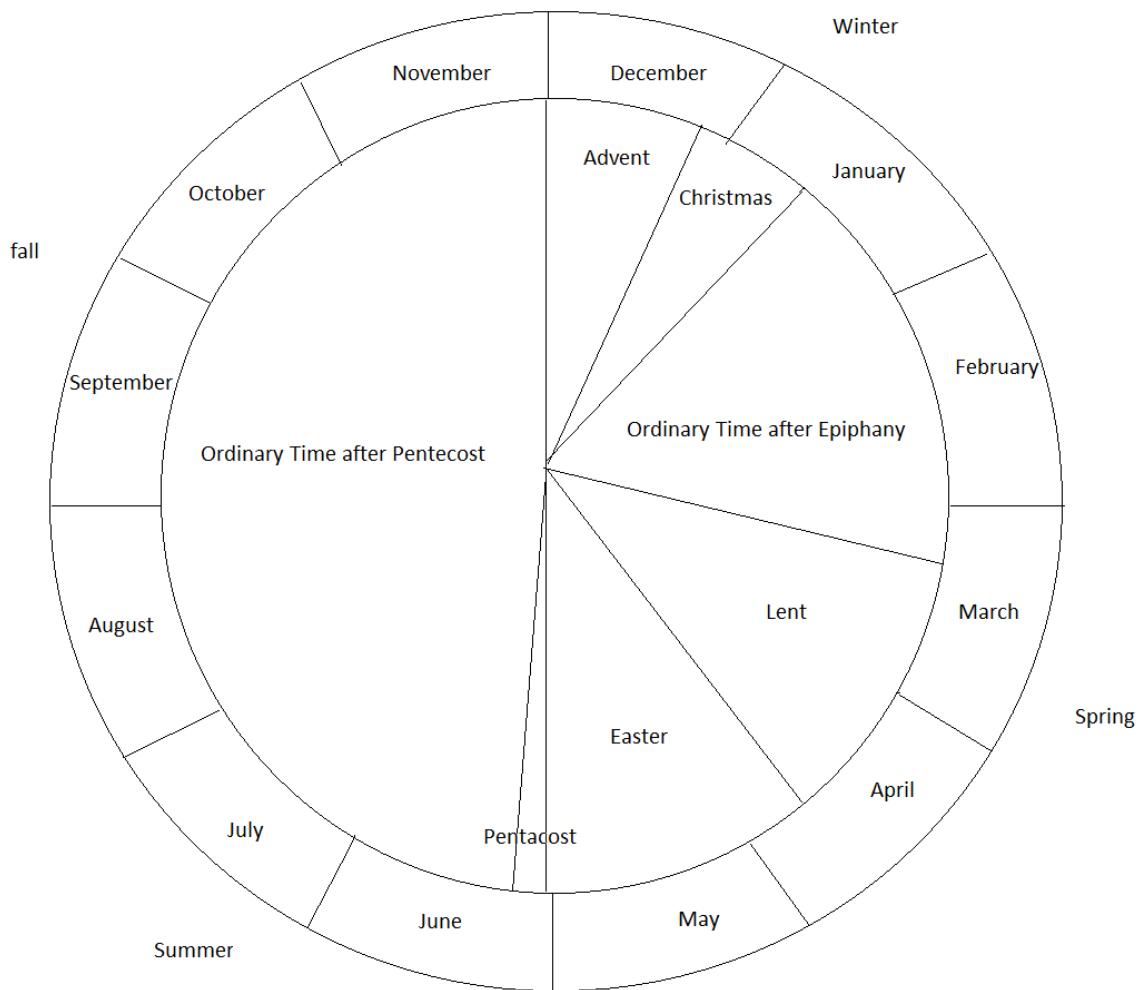
Lakota\Dakota calendar (American Site):
<http://www.wwu.edu/skywise/indianmoons.html>

- Compare the First Nations seasons with the four seasons. Ask, “How are they similar? From students responses, on a chart paper, write down a list of similarities.
- Ask, “How they are different?” In a similar ways as above, record differences between First Nations and western ways of viewing the seasons.
- Explain that the church, like First Nations and western views, has its own calendar and seasons too. Explain that our church year is called the liturgical year and that our calendar, correspondingly is called the liturgical calendar.
- If possible, display a liturgical Calendar. Links to a liturgical calendar are found below:
- Teachers may compare a first Nations calendar, a western yearly calendar and a liturgical calendar.
- Be explicit about the distinctions in the liturgical seasons and show how liturgical seasons, such as advent and Christmas, correspond with the four seasons. Also remind the students that the First Nations views on the seasons, are marked by different events, often events that happen in nature, like the migration of geese and ducks, the birth of herd animals like deer, the falling of snow, the first rains of spring etc.
- Remark that in winter, the corresponding liturgical season is Advent and Christmas. In spring it is Lent and Easter while summer consists of Pentecost and ordinary time and in the fall we have only ordinary time.

Liturgical seasons:



- Discuss and contrast the colors tell us what liturgical season compared to the colors of the medicine wheel. The medicine wheel colors and quadrants are mentioned above.
 - Liturgical colors and seasons. See <http://www.fisheaters.com/colors.html> or <http://www.aquinasandmore.com/catholic-articles/the-catholic-liturgical-year/article/208>
- Discuss how the colors have different meanings for First Nations people and Catholics.
- To wrap up the activity students may color a liturgical calendar below filling in the natural seasons as well.



Appendix A: Table of Correlation

Faith Permeation lesson Documents	Outcome and Indicator	Catechism of the church	Gospel/ biblical references/ Church documents and encyclicals	Christian Ethics resources
-----------------------------------	-----------------------	-------------------------	---	----------------------------

Lesson 1: Seasons and Calendars among in First Nations cultures, in Science and Faith	DS1.1 d, h, i	988 991	Nativity: Luke 2:1-21 Matthew 2:1-16 Epiphany: Matthew 2:1-12 Passover: Matthew 26:17-35 Mark 14:12-25; Luke 22:7-20 and John 13:1-38 Resurrection: Mark 16:1-8 Luke 24:1-12 Matthew 28:1-10 Pentecost: Acts 2	WBTG. Unit 4: themes 10-12 (advent) Unit 5: themes 13-15 - Christmas. Unit 7: theme 19 (Lent) Unit 9 : themes 25 and 26 (Easter)
--	---------------	------------	---	--