



Saskatchewan Catholic Schools Curriculum Permeation

REVEALING CHRIST IN ALL WE TEACH

SCIENCE 2

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.



Saskatchewan Catholic Schools Curriculum Permeation

Science 2 Faith Permeation Essential Connections

Unit Theme: Animal Growth and Changes

Provincial outcomes and indicators for this unit require that students explore and understand how various animals change and grow over their life cycle. Students are expected to compare these animal life cycles to their own pattern of growth and change. Lastly students are required to explore the interdependence that human and animal life share.

Catholic Faith Focus for Learning:

This faith permeation unit will enable students to explore animal growth and change from a faith aspect. They will appreciate that all life cycles including theirs are part of God's plan. They will explore how people and animals interact, sometimes interdepend and how both are affected by the other. Students will learn how humans affect animal life but how we are asked by God to care for creation as good stewards.

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

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 and be able to explain how people and animal growth and change are a part of God's plan.
- Students will be able to describe and give examples of how animals and human life interact in both positive and negative intentional and unintentional ways.
- Students will be able to describe and understand what it means to be a good steward of animal life.

Catholic Faith Essential Questions:

- 1) How is animal and human change and growth a part of God's plan?
- 2) How do animals and human beings interact and affect each other?
- 3) How am I to be a good caretaker of animal life?

Teacher Notes:

Often throughout the following units, references to the religion program resources: *We Belong To The Lord Jesus* and *Fully Alive* will be abbreviated WBLJ and FA respectively.

Lesson 1: How Animals and People Grow and Change

Purpose: In this lesson students will learn about God's plan for people throughout a human life cycle. They will explore their own growth and change. They will explore how First Nations view lifecycles and compare those to their own. Lastly students will explore biblical accounts of Christ life and compare these to a butterfly's.

Teacher Note: Prior to this lesson teachers should have already introduced students to change and development of familiar animals. Students should understand and be familiar with differences in development of some animals. For example some offspring like fish, sharks, turtles or snakes are born similar appearance to their parents, but are significantly smaller.

Innately, these animals have instincts that allow them to fend for themselves. Other offspring, particularly those of mammals, need much parental care. Other offspring, like butterflies, dragonflies, mosquitoes and meal worms undergo complete or partial metamorphosis.

This lesson works loosely with the themes of Baptism in Unit 2 theme 5 “We gather” from WBLJ and FA Theme 1: Created and Loved by God topic 1: Each one Is Special pg. 4-5.

Curricular Outcomes and Indicators:

Outcome: AN2.1 Analyze the growth and development of familiar animals, including birds, fish, insects, reptiles, amphibians, and mammals, during their life cycles.

- a. Pose questions about the growth and development of familiar animals.
- b. Use a variety of resources (e.g., Elder, naturalist, zookeeper, park warden, pet store, books, pictures, and videos) to find information about the life cycles of living things.
- d. Recognize the cyclic nature of Mother Earth expressed by the Medicine Wheel, including life cycles and seasonal behaviours of animals.

Outcome: AN2.2 Compare the growth and development of humans with that of familiar animals.

- a. Pose questions about similarities and differences between animal and human growth.
- e. Compare patterns in human growth and development to that of familiar animals.

Time Needed: 40 minutes

Materials:

- Handouts Medicine Wheel and the butterfly
- Bible
- Colored pencils and pencils

Instructional Procedure:

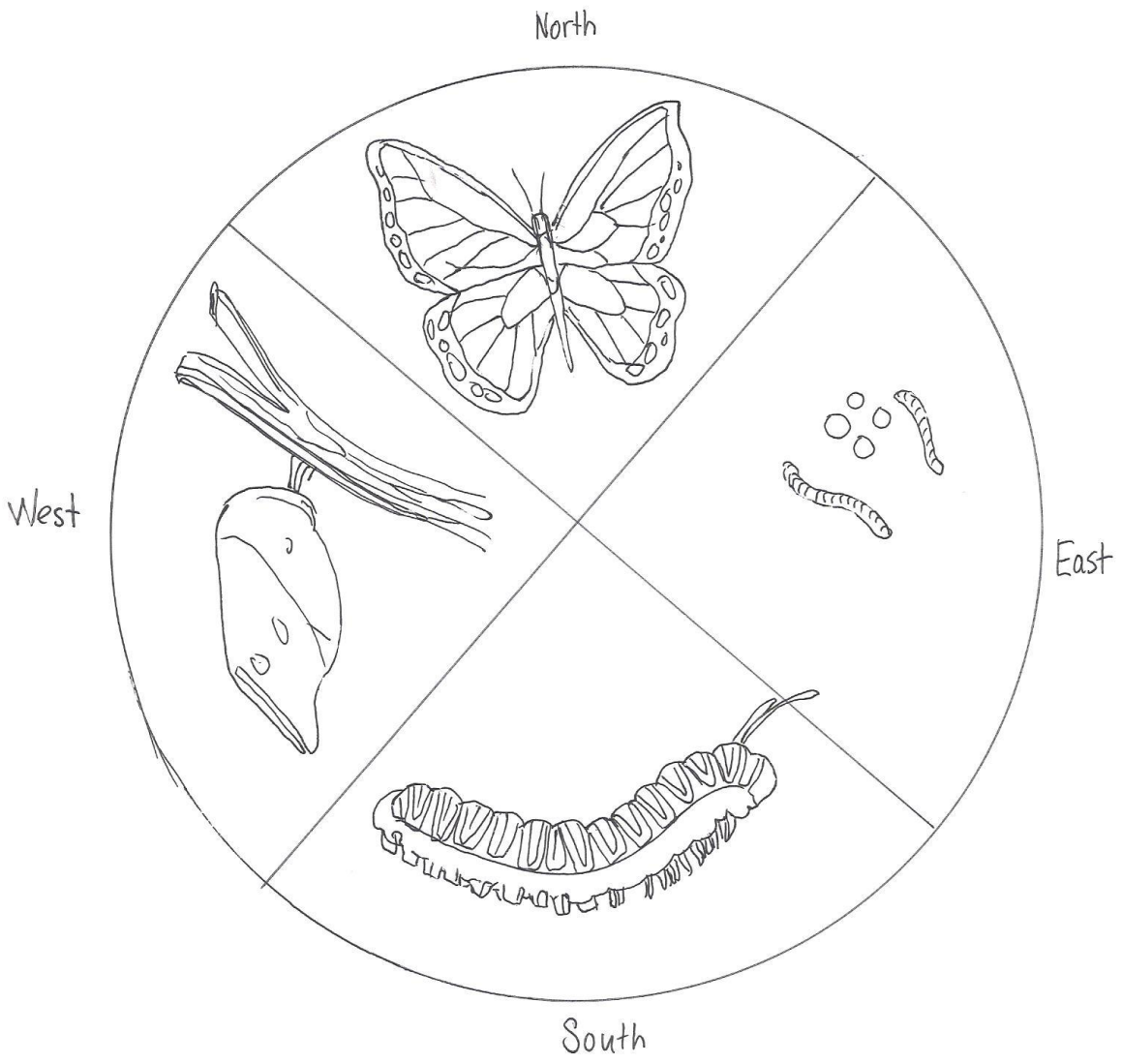
First Nations Cycles and Growth (20 minutes)

- Review life cycles with the students. Provide the handout ‘Reviewing life cycles’. Read and review the handout with the students.
- Compare the traditional First Nations concept of cycles in the previous units. Present a lifecycle of a butterfly. If possible order a butterfly kit from Boreal Northwest. Feeding and housing instructions come with the kit. Models from Micheal’s or Toys R’ Us are also available for students to examine and see.
- Present the handout of the four directions on which butterflies are illustrated. Students may color their handouts.
- Describe the four directions teachings and the medicine wheel to students. The Medicine wheel is a concept that was borrowed from American First Nations and adopted among various Saskatchewan First Nations. In Saskatchewan primarily the Saulteaux and some Cree elders, knowledge keepers and teachers use the medicine wheel concept. Among other Cree and Dakota elders the sacred hoop or the four directions teachings are used instead. 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 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/>
- Draw each stage, what they represented for some First Nations and ask students to consider how a particular animal's life stage might be represented in that cycle.
- Then ask students to reflect about their own growth and development.
- Ask, "Take a minute to examine your baby photo. How did you look then?"
- Have students take a moment to think about how they look now and to examine their current photo. For students who don't have a current photo teacher may photograph them or they may provide students with a mirror.
- Ask, "Where do you think you are on the medicine wheel?"
- Provide time for discussion.
- An example of the medicine wheel and life stages of a butterfly is illustrated on the next page. On a blank medicine wheel, students may represent themselves in the different stages of life.



Jesus and his growth and Change (30 minutes)

Show the butterfly metamorphosis video. An excellent video that show butterfly metamorphosis is:

<http://www.edutube.org/video/metamorphosis-life-cycle-butterfly-time-lapse>

- Ask, “Where do we learn about Jesus’ growth and Change?”
- Compare Jesus’ growth and change to a butterfly’s life cycle.
- Explore with the students from a children’s bible the following accounts:
 - A) **The nativity:** Read the nativity to the students. Ask students to describe what phase of life Jesus underwent. Ask, “How was Christ a baby like you?”
 - B) **Jesus in the temple:** Read ‘Jesus in the Temple’ to the students. Ask students to describe this part of Jesus’ life. Compare how they are similar but also different. Ask, “What part is different?” Students should point out that Jesus is far wiser than his years.
 - C) **Jesus in the Jordan:** Read the baptism of Jesus to the students. Ask, “How is Jesus’ baptism like a butterfly’s transformation?” You may have to help students draw the parallel that at Christ’s baptism his old life like the chrysalis and the caterpillar body fall away while Christ emerging from the Jordan represents a new phase of life like a butterfly emerging from the chrysalis.

Reviewing Life Cycles

Student Name: _____

God has a plan for all His living things. God’s creatures grow and change. They go through a life cycle. This means that all of God’s living creatures are born alive from their mother or hatch out of an egg. They grow as babies, mature and eventually they die. We believe that all life is a gift from God and that’s why we believe we need to show respect for all stages of a living thing’s life cycle including people. Look at the life cycles below, can you fill in the missing part?

A Human Life Cycle

Baby → _____ → Teenager → Adult

A Frog Life Cycle

Egg → _____ → Frog

A Butterfly’s Life Cycle

Egg → _____ (Larva) → _____ (Pupa) →
Butterfly

Life Cycle of a Snake

_____ → hatchling → juvenile snake
→ _____

A Dog's Lifecycle

_____ → juvenile dog → _____

Lesson 2: How I grow and Change

Purpose: They will learn about aspects of their own life cycle and describe the life cycle of their peers through photographs. They will compare their own cyclic growth to a familiar animal.

Teacher Notes: Prior to this lesson, please have each student to bring a current picture of themselves and a photo of themselves as babies or infants. Photos or pictures of a familiar animal. This may be a family pet. Two photos will be needed one as a juvenile and one as baby. Ie. Newly hatched snake and a yearling snake. Photos from the internet may be used.

Themes in FA Theme 3 Topic 1 'Life Begins in Love' and Topic 2 'How Life begins' as well as Theme 3 Topic 5- 'The Gift of Our Bodies' provide connections and correlation between the religion program and the faith outcomes of this lessons.

Curricular Outcomes and Indicators:

Outcome: AN2.2 Compare the growth and development of humans with that of familiar animals.

- Pose questions about similarities and differences between animal and human growth.
- Predict ways in which humans change as they grow.
- Create representations of changes in the growth and development of humans throughout their life cycle (e.g., baby, preschooler, elementary student, teenager, adult, and elderly person).
- Sequence pictures or illustrations of humans and familiar animals according to stage of life cycle.
- Compare patterns in human growth and development to that of familiar animals.

Time Needed: As indicated and required.

Materials:

- a current picture of the student and a baby picture.

- Photos or pictures of a familiar animal or family pet
- Poster board, glue, scissors, markers, chart paper

Instructional Procedures:

We Match Our Photos (20 minutes)

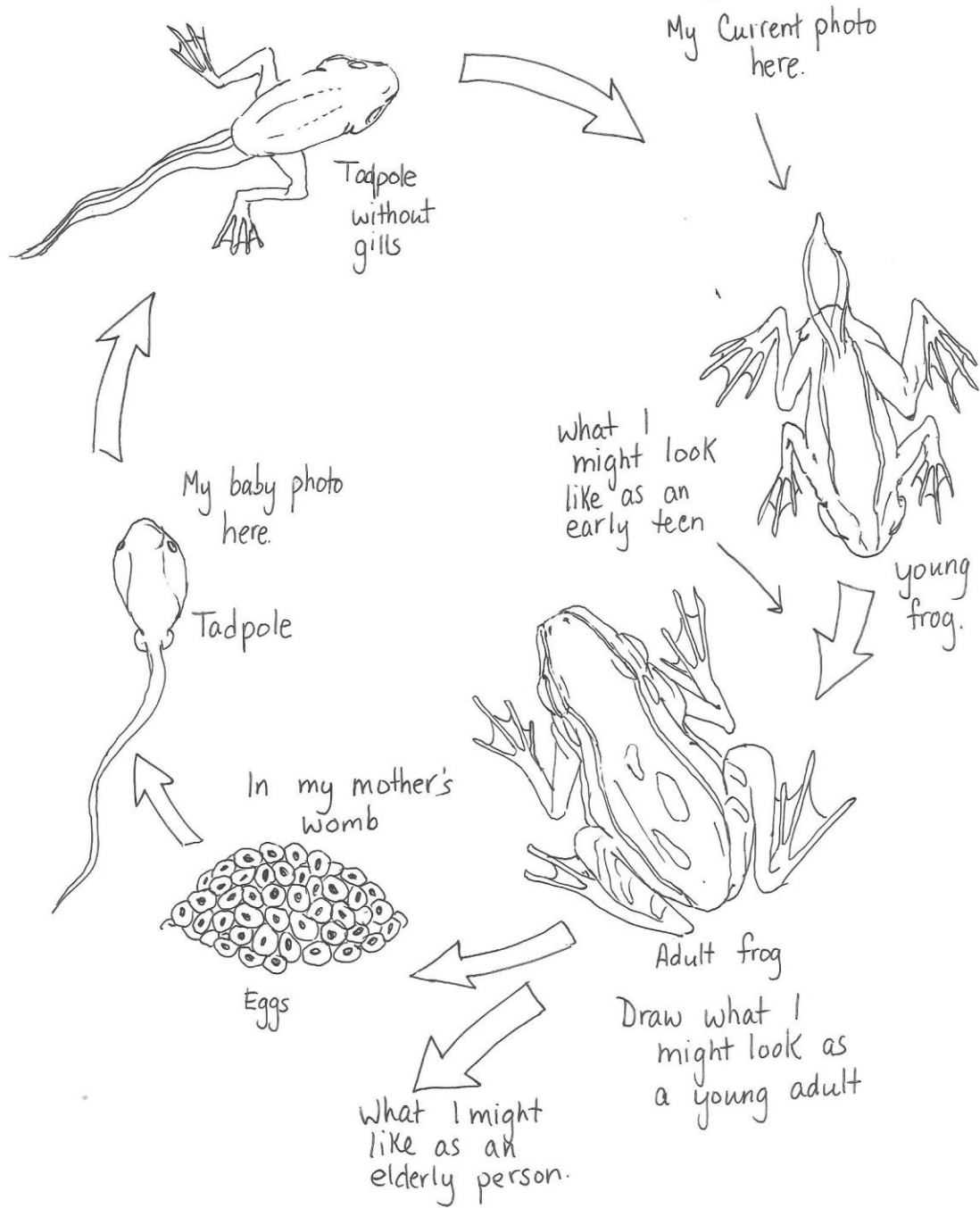
- Before beginning the class, introduce the activity by reviewing the story of the Brunelle family from Topic 1 in Fully Alive. Have students reflect on a moment when they were given news that a new baby brother, sister, a cousin was about to arrive. Ask, ‘How did that make you feel?’ Teachers may wish to have students share or just reflect on the question. Follow up questions might include how siblings reacted to their birth.
- Discuss ways that a new baby’s arrival affects everyone’s life in the family. Then introduce the activity, ‘Matching Photos’ by inviting students to sit together in small groups of your choosing. Provide a marker and chart paper for every group.
- Ask students from each group to provide you their pictures and mix up their current pictures and their baby pictures. .
- Ask the peers in each group to match both baby picture and current picture to the appropriate member in each group.
- Once each group has completed the task have them consider and share answers to the following question: “How has each person changed and grown since they were a baby?”
- Students will make a list of these changes on chart paper.
- Each group will present their findings to the class and the teacher will post the chart paper around the classroom.

Lesson Culminating Activity (1 hour)

- Then invite students to return to their desks. Provide each student will a poster board.
- On each poster board or foolscap have students write the title ‘How we change and Grow’
- On their poster board have students paste their photo as a baby on the far left, in the middle of the page and their current photo above the page under the title.
- Then have students illustrate what they might look like as an adult and then as an elderly person on the bottom of their page.
- Along with each stage of their own life, they may create a drawing or paste an analogous photo of another animal’s life cycle.
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- Under each photo and picture have the students write a couple sentences describing how they grow or help students write out their sentences. An exemplar ‘How we grow and change’ illustration on the following page will help teachers visualize the final product.

Exemplar: How we grow and change

How We Grow and Change



Lesson 3: How We Need Each Other

Purpose: In this lesson students will learn about God’s plan for animals and people. They will learn how all animals including humans depend on each other. Students will also go on a nature walk in order to observe how animals need and depend on plants and other things in their environment to live but also to decide how they depend on humans or are affected by humans.

Curricular Outcome and Indicators:

Outcome: AN2.3 Assess the interdependence of humans and animals in natural and constructed environments.

- a. Predict which animals live in various locations (e.g., tree, underground, nest, cave, water, and soil) within a variety of natural and constructed environments.
- b. Observe familiar animals in natural (e.g., tree, stream, pond, forest, and beneath a rock) and constructed (e.g., garden, sports field, zoo, aquarium, and city) environments safely and respectfully.
- d. Assess features of natural (e.g., woodland, stream, grassland, and forest) and constructed (e.g., backyard, zoo, schoolyard, and classroom) environments that support or hinder the health and growth of familiar animals.
- e. Analyze ways in which human activities intentionally or unintentionally can help or harm wild and domesticated animals.
- f. Examine ways in which humans and animals interact with each other (e.g., pet, companionship, transportation guide dog, search and rescue, and providing food), including ways in which animals can cause harm to humans.

Time Needed: 1 hour

Instructional Procedure:

Nature Walk (40 minutes)

Teacher Notes

In this activity students will explore a park, or a school yard or nature to observe animals in their habitats. Focus of this activity should be on interaction of organisms in their environments and how they interact with humans either directly or indirectly.

This lesson correlates to ‘God’s Gift of Creation’ in WBLJ unit 5, theme 14 and FA Theme 4- Topics 1: Some People we Depend On. Where possible, teachers may wish to draw the principle ideas and connections from these themes to possible faith outcomes in this lesson.

This lesson connects most directly the WBLJ Earth Talk. Earth Walk Theme 16 ‘We Savour the gifts of Creation’. In that lesson students go on an earth walk. Teachers invite them to bring their senses with them on their walk. This activity could be done directly with this Nature Walk lesson.

Instructional Procedure:

- Before the class begins, draw the students attention back their learning and instruction about ‘God’s Gift of Creation’ in WBLJ unit 5, theme 14 and FA Theme 4- Topics 1:Some People we Depend On. Have students recall how all creation is a gift from God and how like the people we depend on, animals and plants are creatures that are needed for our wellbeing and the wellbeing of the planet.
- Review rules for appropriate student behavior during this activity. Remind students that they may take photos or illustrate what they observe but that organism must remain in their natural state.
- Remind the students to record their observations in their books. Prompt the students to think about how animals interact with each other, with their environment and with us. Example: Should students finding decomposing leavers or a rotting log point out how the trees and the soil depend on decomposers to break down dead organic things. Without these decomposers such as insects and worms, dead organic materials and their nutrients can’t recycle. Humans rely on soil and on plants that use the nutrients recycled by decomposers.
- When students return to the class room allot 10 minutes for students to share observations. Record students observations on a chart sheet. At the top of the chart sheet write, ‘How organisms interact with each other and with us. With each observation pose the questions, “How does this living thing affect the other living things around it? How does it affect people?”
- Post the observations.

Lesson 4: Respecting Living Things

Purpose: In this lesson students appreciate and learn why it is important to respect animal life. The lesson will introduce students to idea of stewardship. This lesson correlates with

Teacher Note: The Catholic belief in stewardship has traditionally applied to one’s wealth, talents, and time. Yet within the last 40 years the focus of stewardship has come to encompass an environmental aspect. Catholic belief in environmental stewardship includes a respect for all living creatures which as God’s gift, is our responsibility. As good stewards we don’t own ecological life but live with it, in a natural environment and we benefit from it. We believe that ecological resources equally as important as mineral or abiotic resources are to be shared with others and must be used wisely for the benefit of future generations.

For the lesson teachers should familiarize themselves with facts about the burrowing owl.

- Facts about burrowing owls can be found on the following websites:

<http://burrowingowlconservation.org/facts.html>

<http://www.pc.gc.ca/pn-np/sk/grasslands/edu/edu1/b.aspx>

<http://www.birdcanada.com/birds-of-canada/owls-in-canada/burrowing-owls-in-canada/>

<http://publications.gc.ca/collections/Collection/CW69-14-4-2006E.pdf>

- This lesson correlates to ‘God’s Gift of Creation’ in WBLJ unit 5, theme 14 God’s Gift of Creation’ and Fully Alive: Theme 5- Topic 2- Gifts of the Earth Topic 3- How we work with the God’s Gifts. Revisit with the students the principle ideas from these Themes. If possible, teach the lessons in conjunction with each other.

Curricular Outcomes and Indicators:

Outcome: AN2.3 Assess the interdependence of humans and animals in natural and constructed environments.

- c. Examine the importance and sacredness of animals in First Nations, Métis, and other cultures.
- e. Analyze ways in which human activities intentionally or unintentionally can help or harm wild and domesticated animals.
- f. Examine ways in which humans and animals interact with each other (e.g., pet, companionship, transportation guide dog, search and rescue, and providing food), including ways in which animals can cause harm to humans.

Time needed: 1 hour and 40 min

Ways Humans Affect Burrowing Owls (40 min)

Materials: colored chips, chart paper, markers, dice, pencils.

Instructional Procedure:

- Introduce an endangered species from Saskatchewan, the burrowing owl.
- Play a clip of the burrowing from <http://burrowingowlconservation.org/>
<http://www.arkive.org/burrowing-owl/athene-cunicularia/video-08b.html>
- As the students watch the clip, point features about the burrowing owl.
- Have students appreciate that the burrowing owl’s status as an endangered species. Explain that the population has decreased by about 22% per year from 1980 to the 1990s. In the last thirty or so years the government of Canada predicts burrowing owl populations have dropped 90%.
- Ask students about the decline of the burrowing owl: ‘What is causing there to be fewer and fewer burrowing owls each year?’
- Have students brainstorm ideas about why burrowing owls are disappearing.
- After students have generated a list, post the list on the board.
- Then explain that after the activity students will see if their ideas match the facts about why burrowing owls have disappeared
- Divide students into pairs.
- Pass out the activity sheet, dice and chips to each pair. Each student will start with 30 chips which they’ll put into a pile. Explain to the students that if they roll a 1 on the dice, they’re allowed to add another chip to their pile. When they roll a 1 it means that the burrowing owls

have succeeded in producing a baby which grows to become an adult. If they roll a 2 or a 4, they lose a chip. A 2 or a 4 represents pesticides that kill the burrowing owls through the animals they eat. If they roll and 3 or a 5 another chip is removed from their pile. A 3 or 5 signifies that a burrowing owl can't survive because it has lost habitat. Habitats of burrowing owls consist of abandoned gopher, badger, marmot holes. When these holes are plowed under to make roads, for farming, to develop new homes or properties the burrowing owl returns yearly to place where it can no longer make a home. When mating pairs return to such a place, no more eggs are produced which leads to a decline in the environment. A roll of 6 means that a burrowing owl had been killed by human activity such as driving.

- By the end of the game students should appreciate that the number of owls has dramatically decreased and few babies are born.
- Ask students to look at the board and compare their brainstormed answers to factual reasons why burrowing owls have disappeared. "In what negative ways do humans affect the burrowing owl?"
- Sum up with a discussion.

Culminating Activity:

The Burrowing Owl as a Gift from God (1 hour)

Materials: Shoe box, gift wrap, pencils and paper,

- Introduce the idea of being a good caretaker. Ask students to give ways that they take care of their personal belongings or a family pet. Compare this to taking care of the burrowing owl.
- Explain that a good caretaker appreciates owls as gifts from God that they need to be protected for future generations to learn from and to enjoy, that they have inherent value to the environment and play an important role in the environment as predators but also as prey.
- Ask, "How can we be good caretakers of burrowing owls?" Have students create a list which teachers can post on the board.
- Teachers then should provide a list of ways that people are attempting to save the burrowing owl. Then teachers can state, "From this list that adults are doing to save the burrowing owl, what are ways that you, even as young as you are, can do to help the burrowing owl?"
- A few follow up activities to consider are:
 - a) Fundraising to donate to the burrowing owl interpretive center in Moose jaw.
 - b) visit the burrowing owl center to learn more about the burrowing owl
 - c) invite the traveling burrow owl interpretive display to come to your school.
 - d) Educate someone at home or a friend about the plight of the burrowing owl.
- For a summative activity, have the students create their own poster about the burrowing owl. On their poster help students write down two facts about burrowing owls and two ways

humans affect them. Encourage students to take their posters home to share with their parents.

OR

- Students may build a diorama which holds their drawing of a burrowing owl or a cut out of a burrowing owl. Students would illustrate the habitat of the burrowing owl. Cut out green paper to simulate grass and cut a hole to show an abandoned burrow in which they live. When students are finished have them gift wrap their box with a bow. Write a caption above the box “Burrowing Owl- Gift from God. Please take care.” On a gift tag large enough for people to read, have students write out a care-sheet for the burrowing owl. Care sheets would include some facts about the burrowing owl but more importantly they would contain ways we could protect the burrowing owl such as habitat preservation, eliminate use of pesticides etc. Include a passage about thankfulness from the bible. A suggestion includes:

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 Animals and People Grow and Change <i>First Nations Cycles and Growth</i> <i>Jesus and his growth and Change</i>	AN2.1 a,b,c AN2.2 a,e	2402, 2415,2416, 2417, 2418	Nativity: Luke2:1-20; Matthew1:18-25 Jesus in the temple: Luke 2:39-52 <i>Baptism of Jesus</i> Matthew 3:13-17; Mark 1:9-11 and Luke 3:21-22; John 1:29-33	We Belong To The Lord Jesus Baptism: Unit 2 theme 5 “We gather”. Baptism Fully Alive- Theme 1: Created and Loved by God topic 1: Each one Is Special pg. 4-5.
Lesson 2: How I grow and Change <i>We Match Our Photos</i> <i>Lesson Culminating activity</i>	AN2.2 a,b,c,d,e	2402, 2415,2416, 2417, 2418		Fully Alive Theme 3 Topic 1- Life Begins in Love and Topic 2 How Life begins. Fully Alive Theme 3 Topic 5- The Gift of Our Bodies.
Lesson 3: How We Need Each Other	AN2.3 a,b,d,e,f	2402, 2415,2416, 2417, 2418	Genesis 1	We Belong To The Lord Jesus: God’s Gift of Creation’ in unit 5, theme 14 Canadian Conference of

				<p>Catholic Bishops-Our Relationship with the Environment: a need for conversion</p> <p>Fully Alive, Theme 4- Topics 1:Some People we Depend On</p> <p>WBLJ Earth Talk. Earth Walk Theme 16 ‘We Savour the gifts of Creation’</p>
<p>Lesson 4: Respecting Living Things</p> <p><i>How Humans Affect Burrowing Owls</i></p> <p>Culminating Activity</p>	AN2.3 c,e,f	2402, 2415,2416, 2417, 2418, 2456	<p>Genesis 1</p> <p>Romans 8.22 and 21</p> <p>Luke 15.11-32</p>	<p>We Belong To The Lord Jesus: God’s Gift of Creation’ in unit 5, theme 14</p> <p>Fully Alive: Theme 5- Topic 2- Gifts of the Earth Topic 3- How we work with the God’s Gifts.</p> <p>Canadian Conference of Catholic Bishops-Our Relationship with the Environment: a need for conversion</p>

Unit Theme: Solids and Liquids

In this unit students are expected to learn to describe attributes and understand the concepts of solids and liquids. Students will explore examples of these in their surroundings. Students will experiment with solids and liquids that are familiar to them.

Catholic Faith Focus for Learning:

The Catholic Faith focus for this unit seizes upon these scientific ideas that describe solids and liquids to introduce a key sacrament to the Catholic life, Eucharist. Science descriptions can relay the physical aspect of the Eucharist but cannot describe the metaphysical. This unit allows teachers a chance to use science terms to describe the ‘accidents’ of the bread and wine- that which we can see, feel, touch and taste but it also provides an opportunity to introduce students to the metaphysical component, the divine substance of Christ, a spiritual aspect of this sacrament that we can’t see but understand through faith. It is a chance to discuss and describe how Eucharist is important to our faith and our sacramental life.

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

God's World is Made of Solids and Liquids

- Solids and liquids are part of God's divine plan for creation. The biblical creation story is allegorical for a profound reality. In that reality, creation is comprised of the building blocks of matter, particles such as atoms and molecules, arranged into states with which human beings understand innately; matter is arranged as solids, liquids and gases. By turning to the creation story we see how people of faith attempt to understand the reality God has made for them. In biblical accounts liquid in the form of water exists above and on earth. Solids, as rock and soil, are fashioned to form the earth. Air, a gas, imbues humans with life.
- **337** God himself created the visible world in all its richness, diversity and order. Scripture presents the work of the Creator symbolically as a succession of six days of divine "work", concluded by the "rest" of the seventh day.²⁰⁴ On the subject of creation, the sacred text teaches the truths revealed by God for our salvation,²⁰⁵ permitting us to "recognize the inner nature, the value and the ordering of the whole of creation to the praise of God."²⁰⁶ (CCC337)
- **338** *Nothing exists that does not owe its existence to God the Creator.* The world began when God's word drew it out of nothingness; all existent beings, all of nature, and all human history are rooted in this primordial event, the very genesis by which the world was constituted and time begun.²⁰⁷ (CCC338)

Bread and Wine as examples of a solid and a liquid

- Bread, a solid, retains its shape, is made up of matter (carbon, oxygen, hydrogen and other elements) and takes up space. Wine is a liquid mixture that has volume, no shape and is also made up of matter (carbon, oxygen, hydrogen and other elements).
- **1324** The Eucharist is "the source and summit of the Christian life."¹³⁶ "The other sacraments, and indeed all ecclesiastical ministries and works of the apostolate, are bound up with the Eucharist and are oriented toward it. For in the blessed Eucharist is contained the whole spiritual good of the Church, namely Christ himself, our Pasch."¹³⁷
- **1325** "The Eucharist is the efficacious sign and sublime cause of that communion in the divine life and that unity of the People of God by which the Church is kept in being. It is the culmination both of God's action sanctifying the world in Christ and of the worship men offer to Christ and through him to the Father in the Holy Spirit."¹³⁸
- **1326** Finally, by the Eucharistic celebration we already unite ourselves with the heavenly liturgy and anticipate eternal life, when God will be all in all.¹³⁹
- **1333** At the heart of the Eucharistic celebration are the bread and wine that, by the words of Christ and the invocation of the Holy Spirit, become Christ's Body and Blood. Faithful to the Lord's command the Church continues to do, in his memory and until his glorious return, what he did on the eve of his Passion: "He took bread. . . ." "He took the cup filled with wine. . . ." The signs of bread and wine become, in a way surpassing understanding, the Body and Blood of Christ; they continue also to signify the goodness of creation. Thus in the Offertory

we give thanks to the Creator for bread and wine,¹⁵⁴ fruit of the "work of human hands," but above all as "fruit of the earth" and "of the vine" - gifts of the Creator. The Church sees in the gesture of the king-priest Melchizedek, who "brought out bread and wine," a prefiguring of her own offering.¹⁵⁵

- **1334** In the Old Covenant bread and wine were offered in sacrifice among the first fruits of the earth as a sign of grateful acknowledgment to the Creator. But they also received a new significance in the context of the Exodus: the unleavened bread that Israel eats every year at Passover commemorates the haste of the departure that liberated them from Egypt; the remembrance of the manna in the desert will always recall to Israel that it lives by the bread of the Word of God;¹⁵⁶ their daily bread is the fruit of the promised land, the pledge of God's faithfulness to his promises. The "cup of blessing"¹⁵⁷ at the end of the Jewish Passover meal adds to the festive joy of wine an eschatological dimension: the messianic expectation of the rebuilding of Jerusalem. When Jesus instituted the Eucharist, he gave a new and definitive meaning to the blessing of the bread and the cup
- **1368** *The Eucharist is also the sacrifice of the Church.* The Church which is the Body of Christ participates in the offering of her Head. With him, she herself is offered whole and entire. She unites herself to his intercession with the Father for all men. In the Eucharist the sacrifice of Christ becomes also the sacrifice of the members of his Body. The lives of the faithful, their praise, sufferings, prayer, and work, are united with those of Christ and with his total offering, and so acquire a new value. Christ's sacrifice present on the altar makes it possible for all generations of Christians to be united with his offering.
- **1374** The mode of Christ's presence under the Eucharistic species is unique. It raises the Eucharist above all the sacraments as "the perfection of the spiritual life and the end to which all the sacraments tend."²⁰¹ In the most blessed sacrament of the Eucharist "the body and blood, together with the soul and divinity, of our Lord Jesus Christ and, therefore, *the whole Christ is truly, really, and substantially contained.*"²⁰² "This presence is called 'real' - by which is not intended to exclude the other types of presence as if they could not be 'real' too, but because it is presence in the fullest sense: that is to say, it is a *substantial* presence by which Christ, God and man, makes himself wholly and entirely present."²⁰³
- **1375** It is by the conversion of the bread and wine into Christ's body and blood that Christ becomes present in this sacrament. The Church Fathers strongly affirmed the faith of the Church in the efficacy of the Word of Christ and of the action of the Holy Spirit to bring about this conversion. Thus St. John Chrysostom declares:

It is not man that causes the things offered to become the Body and Blood of Christ, but he who was crucified for us, Christ himself. The priest, in the role of Christ, pronounces these words, but their power and grace are God's. This is my body, he says. This word transforms the things offered.²⁰⁴

- And St. Ambrose says about this conversion:
- Be convinced that this is not what nature has formed, but what the blessing has consecrated. The power of the blessing prevails over that of nature, because by the blessing nature itself is changed. . . . Could not Christ's word, which can make from nothing what did not exist, change existing things into what they were not before? It is no less a feat to give things their original nature than to change their nature.²⁰⁵

- **1376** The Council of Trent summarizes the Catholic faith by declaring: "Because Christ our Redeemer said that it was truly his body that he was offering under the species of bread, it has always been the conviction of the Church of God, and this holy Council now declares again, that by the consecration of the bread and wine there takes place a change of the whole substance of the bread into the substance of the body of Christ our Lord and of the whole substance of the wine into the substance of his blood. This change the holy Catholic Church has fittingly and properly called transubstantiation."²⁰⁶

Catholic Faith Essential Skills:

- Students will be able to find examples of solids and liquids in the creation story. Students will understand how these fashioned by God are part of His divine plan for Creation.
- Students will be able to describe how bread and wine are examples of a solid and a liquid respectively.
- Students will be able to explain how the sacrament of Eucharist is central to our faith life.

Catholic Faith Essential Questions:

- 1) How are bread and wine examples of solids and liquids?
- 2) What does the sacrament of Eucharist mean for Catholics?
- 3) How are solids and liquids part of God's plan?

Lesson 1: God's World is Made of Solids and Liquids

Purpose: In this lesson students will understand how God's world is made up of matter (particles and molecules) that exist in various states- solids and liquids (and gases if teachers wish to introduce this idea). Students will see how these various states are illustrated in the story of creation. Students will then look for examples of solids and gases in the classroom/

Teacher Notes: At this age students will have a difficult time understanding that the creation story is allegorical or symbolic (CCC337). What is important that students understand is that God created the universe regardless of the fashion it unfolded. Currently overwhelming scientific evidence supports the unfolding of the universe as the result of the Big Bang. The Catholic Church acknowledges that Big Bang and subsequently, evolution are the means by which the world and the life on it was created but stipulates that God initiate Big Bang. A discussion on these subjects would not be appropriate for this age group.

Curricular Outcomes and Indicators:

Outcome: LS2.1 Investigate properties (e.g., colour, taste, smell, shape, and texture) of familiar liquids and solids.

- a. Pose questions that lead to investigation and exploration of the properties of familiar liquids and solids.
- b. Classify objects in various natural and constructed environments as liquids or solids.
- c. Identify examples of how liquids, in all three states of matter, are used at home, in the school, and throughout their communities.

- f. Record and compare observable physical properties (e.g., colour, taste, smell, shape, texture, transparency, and ability to adapt to the shape of container) of familiar liquids and solids.
- g. Distinguish between properties of familiar liquids and solids.
- j. Group or sequence liquids and solids according to one or more observable physical properties (e.g., colour, state, texture, smell, transparency, and buoyancy).

Materials: Bibles, examples of solids and liquids.

- Read the creation story to the students. You may even have the students act out the various parts of creation.
- Then as you read the story to the students have them decide which substances, created by God, are solids, liquids (and gases). Students will group liquids and solids according to their physical characteristics.
- Generate a list and post them on Chart paper around the room. Have each student illustrate one example from creation that is a solid and one that is liquid.
- Then divide the students into groups. Distribute chart paper or a worksheet for each group or group members. Have them complete the chart paper or the worksheet as they move about the classroom or school looking for examples of solids and liquids.
- Allot fifteen minutes to complete the activity. When students are finished, convene them into one large group. Review responses from each group and have them present their findings.

Lesson 2: Bread and Wine

Purpose: In this lesson student will learn about solids and liquids through their experience bread and wine.

Teacher Note: In this lesson students will make bread. Ingredients to make bread should be prepared ahead of time. Teachers will need parental assistance. Prior to this lesson students should have a good grasp of solids and liquids.

Teachers may wish to teach the solids and liquids unit during the Lenten season. This lesson 'making bread' may be taught after students experience the passion of Jesus through activities in unit 8 of WBLJ. This lesson fits well after the themes 22 'Let's Break' and themes 23 'Bread broken for You and Cup Poured for You' in Unit 8 in WBLJ is covered. The lesson functions most appropriately in conjunction with Unit 9 'We Feast at the Table of the Eucharist'.

Curricular Outcomes and Indicators:

Outcome: LS2.1 Investigate properties (e.g., colour, taste, smell, shape, and texture) of familiar liquids and solids.

- a. Pose questions that lead to investigation and exploration of the properties of familiar liquids and solids.
- b. Classify objects in various natural and constructed environments as liquids or solids.
- c. Identify examples of how liquids, in all three states of matter, are used at home, in the school, and throughout their communities.
- e. Select and safely use materials and tools (e.g., magnifier, scale, measuring cup, and spatula) to carry out explorations of the observable physical properties of familiar liquids and solids.
- f. Record and compare observable physical properties (e.g., colour, taste, smell, shape, texture, transparency, and ability to adapt to the shape of container) of familiar liquids and solids.
- g. Distinguish between properties of familiar liquids and solids.
- h. Demonstrate that liquids and solids are matter because they have mass and take up space.
- i. Investigate to determine whether properties of familiar liquids and solids depend on factors such as the amount of substance present.
- j. Group or sequence liquids and solids according to one or more observable physical properties (e.g., colour, state, texture, smell, transparency, and buoyancy).
- k. Predict and test changes in characteristics (e.g., shape, colour, and volume) of liquids when they are changed into solids or gases.

Time required: 1 hour

Instructional Procedure:

Materials: ingredients to bake bread, various tools to examine ingredients, chart paper and markers, mixing bowl, spatula, rolling pin, bread pan.

- Review what students have learned and experienced about the passion of Jesus through the activities in unit 8 of WBLJ.
- Describe the Passover meal, that it is celebrated in the remembrance of the exodus.
- Explain how that Passover meal took on a new meaning when Christ instituted the Eucharist. Describe the importance of the Eucharist to our faith life.
- Explain to the students that they will make bread for the solids\liquids unit in science but describe how their experience in the day's lab will be very different to the Eucharist. Help them understand that in today's lab they get to make bread that keeps them alive for day or two but that the Eucharist gives eternal life. This can be done as a t-chart activity where differences between regular bread and Eucharist can be drawn.

- Review the differences between a solid and liquid with the students. Students should have a clear understanding that both solids and liquids are types of matter that they occupy space and have mass.
- Provide students with materials that will be used to make bread. Describe each as they will be used. Ask the students if the ingredient is a solid or liquid. On a chart paper, record student answers and ask them to share their thinking. By the end of the exercise students should have a strong understanding that solids have a shape while liquids take the shape of the container they're in.
- Divide the students into groups of 4. Distribute some key ingredients, one to each group. Each group will describe the substance's smell, texture, taste (if they can do it safely) and appearance. After each team has had five minutes to examine their ingredient, rotate teams to a different table. When all teams have finished, discuss each key item. Ask them how each ingredient smelled, felt to the touch, tasted if applicable and how it appeared.
- Prior to mixing the items have students wear gloves or wash hands carefully.
- Then as you mix the ingredients, have the students predict what might happen as ingredients are combined into a mixing bowl.
- Give students each a chance to knead the bread to experience its texture.
- As the bread rises and then bakes in the oven or in a bread maker, explain to the students why bread was chosen. Bread and wine were chosen for this lesson to help students understand the physical nature of the sacrament of Eucharist that can be explained from a scientific perspective. However faith helps us to know the spiritual part of bread and the wine as they become the body and blood of Christ. Show students the wine and explain the significance wine and bread as for communion. Describe how wine and bread in the sacrament are the physical signs of God's inner grace.
- Help students understand the idea of transubstantiation at their level, that bread and wine at mass are transformed into the body and blood of Christ. While the bread tastes, looks or smells the same, the aspect that we can't see is now transformed into the body and blood of Christ.
- Explain to the students that the bread they made in the lab isn't the body of Christ and that the wine they saw in class was not transformed in the wine. Transubstantiation occurs only done at mass during consecration.
- Lastly as the bread is served before the students eat it, read Matthew 14:13-21.
- If time permits students may shake a container of cream to make butter. In this process the membranes that surround each droplet of fat dissolve. As smaller droplets combine into a larger mass, the fat solidifies. The liquid portion is buttermilk while the remaining solid, mostly fat is butter. Yum!

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: God's World is Made of Solids and Liquids	LS2.1 a,b,c,f,g,j	337, 338	Genesis 1 1 st Vatican Council, chapter 1 On God the Creator of All Things. <i>Summa Theologica</i> St.Thomas Aquinas	WBLJ God's Gift of Creation' in unit 5, theme 14 WBLJ Earth Talk. Earth Walk Theme 16 'We Savour the gifts of Creation' FA: Theme 5- Topic 2- Gifts of the Earth Topic 3- How we work with the God's Gifts.
Lesson 2: Bread and Wine	LS2.1 a,b,c,e f,g,j	1324, 1325, 1326,1333,1334, 1368	Matthew 14:13-21. Encyclical letter ecclesia de Eucharistia of his holiness pope john paul ii to the bishops, priests and deacons, men and women in the consecrated life and all the lay faithful on the Eucharist in its relationship to the church <i>mysterium fidei</i> encyclical of pope Paul VI on the holy Eucharist	WBLJ Theme 16 'We Savour the gifts of Creation'

Science 2

Faith Permeation Essential Connections

Unit Theme: Motion

Outcomes of physical sciences, especially as it concerns motion, the subject of this unit, does not easily allow for the infusion of faith outcomes. At the provincial curricular level students are expected to be able to demonstrate and apply their understanding of motion. They will be able to use motion descriptors such as 'above, below, under, near' to describe the relative position of an object. To infuse faith into these outcomes teachers will need to stress how motion and relative position are part of the created order and God's creation and His plan for the physical universe.

Catholic Faith Focus for Learning:

To infuse faith outcomes in this unit, teachers will need to stress of relative motion and forces that produce motion are aspects of God's plan for the physical world. Lessons will use examples of motion in the natural; examples of the bible to motion will be used to help students understand relative position.

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

We believe that because God is the creator of the universe and all things in it, motion is part of that created order:

- **279** "In the beginning God created the heavens and the earth."¹¹⁶ Holy Scripture begins with these solemn words. The profession of faith takes them up when it confesses that God the Father almighty is "Creator of heaven and earth" (*Apostles' Creed*), "of all that is, seen and unseen" (*Nicene Creed*). We shall speak first of the Creator, then of creation and finally of the fall into sin from which Jesus Christ, the Son of God, came to raise us up again.(CCC279)

God's divine plan, for salvation of people, includes a physical universe in which they may live. That physical universe contains all necessary elements for life including physical motion and relative position.

- **280** Creation is the foundation of "all God's saving plans," the "beginning of the history of salvation"¹¹⁷ that culminates in Christ. Conversely, the mystery of Christ casts conclusive light on the mystery of creation and reveals the end for which "in the beginning God created the heavens and the earth": from the beginning, God envisaged the glory of the new creation in Christ.¹¹⁸ (CCC 280)
- **290** "In the beginning God created the heavens and the earth":¹²⁸ three things are affirmed in these first words of Scripture: the eternal God gave a beginning to all that exists outside of himself; he alone is Creator (the verb "create" - Hebrew *bara* - always has God for its subject). The totality of what exists (expressed by the formula "the heavens and the earth") depends on the One who gives it being. (CCC290)

The Catholic Church believes that God fashioned a good and ordered, structured universe:

- **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 (CCC299)

We believe that God transcends His creation but that He is also present to it.

300 God is infinitely greater than all his works: "You have set your glory above the heavens."¹⁵⁶ Indeed, God's "greatness is unsearchable".¹⁵⁷ But because he is the free and sovereign Creator, the first cause of all that exists, God is present to his creatures' inmost being: "In him we live and move and have our being."¹⁵⁸ In the words of St. Augustine, God is "higher than my highest and more inward than my innermost self".¹⁵⁹

We believe that God upholds and sustains creation.

301 With creation, God does not abandon his creatures to themselves. He not only gives them being and existence, but also, and at every moment, upholds and sustains them in being, enables them to act and brings them to their final end. Recognizing this utter dependence with respect to the Creator is a source of wisdom and freedom, of joy and confidence:

For you love all things that exist, and detest none of the things that you have made; for you would not have made anything if you had hated it. How would anything have endured, if you had not willed it? Or how would anything not called forth by you have been preserved? You spare all things, for they are yours, O Lord, you who love the living.¹⁶⁰

Catholic Faith Essential Skills:

- Through song, an exploration of biblical passages and examples in the natural world students will understand the concept of relative position and motion.
- Students will understand how these physical science concepts are attributable and form part of God's divine plan.

Catholic Faith Essential Questions:

- 1) How are motion and relative position aspects of God's divine plan for the physical universe?

Lesson 1: Motion and Relative Position

Purpose: In this lesson students will learn that motion and relative position are parts of God's divine purpose for creation. They will be able to use language, actions and drawings to describe their relative position to others.

Time required: 30 min

Teacher Note: This faith permeation lesson isn't intended to replace a strong balanced science program. It is meant to supplement a science program that helps teachers find areas to include faith. Science programs must include other opportunities for inquiry, observation, discussion,

experimentation and scientific literacy. Where possible engender awe and inspire curiosity for relative motion as a part of God's design for the universe.

Outcome: MP2.1 Analyze methods of determining the position of objects relative to other objects.

- a. Describe the position of an object relative to other positions or stationary objects, including themselves, using appropriate vocabulary such as above, below, between, beside, on top, close to, far from, behind, in front of, to the right of, and to the left of.
- g. Collaborate with other students to describe the position of an object from different positions using drawings, and written and oral descriptions.
- h. Explore how changing one's own position affects one's perspective of position relative to self and other objects.
- j. Follow directions to move in a specified way to different positions.

Materials: Handouts, computer and internet connection.

- Begin the class with the video, "Every Move I Make". The song is a worship song that involves motion.
<http://www.youtube.com/watch?v=mAH7OWKslGc&feature=related> (This video has the lyrics)
- Have students create motions and movement for the song. Repeat the song a few times until students have mastered the motions to the song.
- Ask students, "What force did you use to make the actions for the song?"
- Discuss various answers such as muscles, energy, arms and legs to produce the motion.
- Ask students to consider how their positions might look compared to the positions of others in the classroom. Divide the class roughly in two groups based on their positions. Ask one group to look at the screen on which the video is playing. Ask the other groups to note their position,
- Ask, "How does their position change if you look at them from the side? From in front? From behind?"
- Reverse roles and have the other group watch as the first group sings and does the actions. Ask the second group the same set of questions as above.
- Hand out the activity, 'Activity: Relative Position. Read through this activity with the students. Ensure that students have a good understanding of relative motion and motion itself. Have students examine the photos and describe what they see. Have the students answer the questions that follow.
- Reconvene the students and discuss their answers.

Activity: Relative Position

Look at the pictures of people in action. How do we know if they're moving? What are the types of motion that shown in the pictures below?



Motion is an action that comes from movement that we can see. We can experience motion all around us. Everything in the world created by God moves, even the smallest stone. Everything in the world follows rules of nature. For example any object that can't fly falls or drifts to the ground.

How we see something and from where we see it moving is called relative position. We can observe something move from the side, from the front or back, from on top or below we call that relative position.

Question:

- 1) How do you know each person is moving? What clues tell you they are in movement?
- 2) From your view what is the relative position of each person? (Are they on top, below, on the side?)

Relative Position in the bible (30 min)

- Describe and explain relative position vocabulary. Have students generate a list. A brainstorm list of position words such as above, below, on top etc. will help students with the second part of Activity: Position Words
- Hand out a copy of position words to the students. Students may work in pairs. Read through the activity with the students and allot them some time to complete the activity.

Note: Teachers may wish to explain each of the biblical passages after the students are done. Teachers may need to describe terms such as covenant, dome of the sky, tumult, infamous. The passages chosen are from NRSV bible. Teachers may wish to use a children's version to simplify the language. Teachers may wish to do the activity together as a class.

- Teachers may have students generate their own stories, poems or prayers in partners, as a classroom or individually to suit their needs.

Activity: Position Words

Position words are very useful words that help understand where we are in position compared to other things. For example, you may line up behind a friend. Behind tells other people where you are in that line. Look at the list of position words below.

above	below	between	beside	far from	under	before
over						

Use these position words to fill in the bible passages below:

1. **Genesis 1.7:** So God made the dome and separated the waters that were under the dome from the waters that were above the dome. And it was so.
2. **Genesis 7.17:** The flood continued for forty days on the earth; and the waters increased, and bore up the ark, and it rose high above the earth.

3. **Psalm 57.5:** Be exalted, O God, above the heavens.
Let your glory be over all the earth.
4. **Joshua 2.11:** The LORD your God is indeed God in heaven above and on earth below.
5. **Genesis 9.12:** God said, ‘This is the sign of the covenant that I make between me and you and every living creature that is with you, for all future generations:
6. **Ezekiel 22.5:** Those who are near and those who are far from you will mock you, you infamous one, full of tumult.
7. **Exodus 20.3:** you shall have no other gods before me.
8. **Deuteronomy 31.26:** ‘Take this book of the law and put it beside the ark of the covenant of the LORD your God; let it remain there as a witness against you

Can you think of other position words? List them below:

Here is another list of position words. Can you put these words into a story, poem or prayer?

in front of	to the right of	to the left of	close to	near	on top
behind					

Ex. God you are near to me when I am afraid.
 Help me to be patient when I am behind others.
 Help me to be humble when I am in front of others.
 Help me be generous when I am on top.
 Let me be a good friend to friends who walk to the right and to the left of me
 Amen.

Lesson 2: Relative Position and Forces

Purpose: Students will be able to describe types of forces that act on everyday objects. Students will understand how their position changes relative to another's position. By the end of the lesson students will understand that forces which act on objects are part of God's divine plan for creation.

Time required: 1 hour

Outcome: MP2.2 Investigate factors, including friction, which affect the motion of natural and constructed objects, including self.

- a. Pose questions about the motion of natural and constructed objects in their environment (e.g., How do we know if something is moving? What are some different types of motion? Why is it difficult to walk on some surfaces?).
- b. Describe examples of the motion of natural (e.g., birds flying, leaves falling, tree branches swaying, icicles melting, fish swimming, wind blowing, and creeks flowing) and constructed (e.g., vehicles moving, clock hands rotating, balls bouncing, playground swings, and tools operating) objects in their environment.
- c. Investigate, describe, and represent different patterns of movement (e.g., walking, running, swinging, bouncing, sliding, rotating, spinning, crawling, and rolling) of familiar objects, including themselves.
- d. Demonstrate how pushes and pulls can cause an object to speed up, slow down, stop, or change direction.
- e. Describe the movement of a specified object using appropriate vocabulary so that other students can duplicate the movement.

Forces (30 min)

- Emphasize that God has a plan for the universe, that all motion and forces acting on objects are a part of that plan. One part of that plan includes the rules of nature by which objects in motion or at rest behave.
- Describe some natural laws of motion. These 'rules' of motion are derived from Newton's laws.
- After students comprehend some examples of motion laws, then have students describe examples of motion that they have experienced in everyday life.
- Have the students complete the table in the handout. Students may draw or write short sentences to describe their examples as well as the two opposing forces that act on that object.
- Once the students have completed their table, have students share their responses.

- Emphasize that forces that seem to hinder, like friction or gravity, are necessary.
- Introduce the lab below:

Lab (30 min)

Materials:

- Provide students with materials: a long board (1m), a smooth surface and a rough surface, toy car, three books.
- Have students build a ramp by stacking three books on one end and placing one end of the long board over the stack and the other touching the ground.
- On the board place a smooth surface.
- Students will roll their vehicles on the rough surface and record their observations.
- Students will then repeat the experiment with a smooth surface. Again, have students record their experiment.
- When each group is done, reconvene the class. Discuss their results.
- Ask, “What happens if the surface is too smooth and there is too much friction?”. Have students consider what it is like to walk on ice or over a spill.
- Have students consider what life might be like without gravity or without friction. What would such a world look like? How might objects move?
- With a friend discuss what a world without friction or without gravity might look like. Students may draw or write a short story to illustrate their story.
- Closes the class with a prayer sentence that students compose.

Prayer:

Lord we thank you for (one type of motion, object that creates a force or force) which helps us to (one result).

Ex. Lord we thank you for gravity which helps us stay rooted on the earth

Lord we thank you for the moon’s pull which causes the tides to rise

Lord we thank you for our legs which helps us to leap up.

- Gather each prayer sentence and combine them into a longer prayer. Post this prayer in the classroom.

Activity : Forces

Think about the world around you. Most objects some natural rules of movement. Some of these rules are:

- 1) Any object that moves, keep moving unless something slows it down.
- 2) Anything that is at rest, not moving, needs a push or a pull to get it to move.
- 3) When you push or pull something how fast it speeds up depends on the amount of force you use.

- 4) Forces work in pairs. When you push or pull an object, a force pushes or pulls back. For example when you fall, gravity is a force that pulls you down but air pressure is a force that pushes up. If air pressure is stronger gravity then you float. If not, you fall.

Some forces are necessary like friction and gravity. Gravity keeps objects rooted to the earth. Friction provides enough grip so that things don't slip.

Look at the world God has created; can you give examples of motion? For each motion give a force that is making it move and the force that stops it from moving.

Example	Force that is causing the object to move	Force that keeps it from moving

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: Motion and Relative Position <i>Relative Position in the bible</i>	MP2.1 a,g,h,j	279, 280,290,299, 300, 301	*Genesis 1 *1 st Vatican Council, chapter 1 On God the Creator of All Things. * <i>Summa Theologica</i> St.Thomas Aquinas	*WBLJ God's Gift of Creation' in unit 5, theme 14 *FA: Theme 5- Topic 2- Gifts of the Earth Topic 3- How we work with the God's Gifts.
Lesson 2: Relative Position and Forces	MP2.2 a,b,c,d,e	279, 280,290,299, 300, 301	*Genesis 1 *1 st Vatican Council, chapter 1 On God the Creator of All Things.	*WBLJ God's Gift of Creation' in unit 5, theme 14 *FA: Theme 5- Topic 2- Gifts

			* <i>Summa Theologica</i> St.Thomas Aquinas	of the Earth Topic 3- How we work with the God's Gifts.
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*Note: All of these additional resources have limited correlation to the concepts relative motion and position. Rather these documents describe God's action, to create the physical world and to sustain it. Motion and relative position, being part of the physical, is encompassed by God's work.

Science 2 Faith Permeation Essential Connections

Unit Theme: Air and Water

In this unit provincial outcomes and indicators require that students explore the nature and properties of water and air. Students are expected to understand and experience air as a gas and water in all three of states of matter through various activities and labs. Lastly students are expected to understand the importance that water has on the survival of living things. They are expected to appreciate and understand how human activity affects water and air.

Catholic Faith Focus for Learning:

Students will explore significance of water and air in First Nations culture as well as their respective cultures as a segway into an exploration of their importance in the Catholic faith in scripture and tradition. They will explore the significance and symbolism of water, especially in the sacrament of baptism in Catholicism. Lastly students explore ways they can be good caretakers of air and water systems in their milieu.

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

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)

Catholic Faith Essential Skills:

- Students will be able to describe and appreciate water's significance and symbolism within our Faith, as it pertains to baptism and ancient Jewish culture.
- Students will be able to describe and explain the cultural significance of air in our Faith and in Judaism.
- Students will be able to describe ways and take relevant actions to be good stewards of air and water.

Catholic Faith Essential Questions:

Lesson 1: The Importance of Water

Purpose: In this lesson students will understand how important water is for different cultures, specifically First Nations cultures and ancient Hebrew cultures. Students will explore stories from scriptures to appreciate how water has shaped Hebrew culture.

Outcomes: AW2.2 Assess the importance of air and water for the health and survival of living things, including self, and the environment.

c. Recognize the importance of air and water as two of the four elements (i.e., air, water, earth, fire) in Mother Earth in First Nations, Métis, and other cultures.

d. Explain how living things, including humans, require clean air and water for breathing, cooling, drinking, cooking, bathing, and prevention of illness to maintain a healthy body.

Teacher Note:

- In the first part of this lesson, Cultural Interview, students will need the assistance of the parents. It may be necessary to communicate to parents that they may wish to write out the interview on behalf of their child. Pictures may be included if they wished. In this lesson teachers will also describe the cultural significance of water and air for many First Nations in Saskatchewan. For more information on this see the following websites:

Water:

<http://www.afn.ca/index.php/en/honoring-water>

<http://www.spiritsd.ca/learningresources/FNM%20Resources/Gr%202%20Air%20and%20Water%20in%20the%20Environment.pdf>

http://forrex.org/sites/default/files/publications/jem_archive/ISS1/vol1_no1_art7.pdf

<http://shannonhoule.blogspot.ca/2012/02/cree-teachings-cycle-of-life.html>

<http://abusehelplines.org/wp-content/uploads/2011/04/Aboriginal-Training-Modules-final-Dec-15-2011.pdf>

http://www.safewater.org/PDFS/knowthefacts/The_Cree_Language.pdf

Air:

<http://www.afn.ca/index.php/en/honoring-air>

<http://www.spiritsd.ca/learningresources/FNM%20Resources/Gr%202%20Air%20and%20Water%20in%20the%20Environment.pdf>

Teachers may also wish to see the elder profile for water in Pearson Saskatchewan Science 8 on pg.

- **NOTE:** Air like water is considered a spirit among First Nations. It is strongly urged that teachers avoid a discussion on First Nations' understandings on the idea of 'spirit' with this age group as they are too young to grasp the nuances of spirit. Elders warn of several misunderstandings. The first concerns a misinterpretation and the synonymous use of the word ghost for the word spirit. Unlike 'Holy Spirit' and 'Holy Ghost' the two terms are not interchangeable among First Nations cultures. Elders teach that spirit does not mean 'ghost'. For them 'ghosts' are human spirits that remain among people and haven't found their way to the next world on the spirit road. Rather Elders define spirit as energy or a life force. There may also be confusion that leads students to adopt and assimilate a belief that isn't their own into the own spirituality. Lastly the teachings on 'spirit' may fall into a group of spiritual teachings that we are not authorized to teach without the assistance of a cultural advisor or Elder. While we strongly respect the views and beliefs of other cultures, we also need to be cognisant that at this age students may not fully ready to understand or appreciate certain spiritual teachings.
- **Note:** Later on in lesson 1, "The Importance of Water and Air in the Old Testament" there is a place where God's spirit is mentioned. Here because the spirituality is our own, teachers are able to describe what 'spirit' means for Catholics. Please address the idea of spirit but only within our Spirituality.
- In the 'Baptism' section teachers will need symbols of baptism for part 2 of this lesson if possible. It will be difficult to get oil of chrism; teachers may not be able to obtain this but having some symbols like a white garment, a baptismal candle will be help illustrate this lesson.

Instructional Procedure:

Cultural Interview (30 min)

- Have students imagine what it might be like to travel through a desert without water for days. Ask, “How might your lips and tongue feel like? What might you be thinking? How well will your body work without water?”
- Discuss some physiological effects that lack of water has on people, plants and animals.
- Describe how parts of Saskatchewan are very dry. Southern parts of Saskatchewan in the region of Big Muddy form parts of the Bad Lands. These regions are characterized by low rainfall, low scrub brush and little available edible food for people. Explain how these regions are quite arid and desolate. Ask the students how water may have been valued by the people who lived or travelled through the badlands, especially First Nations. (More info on Big Muddy- http://www.virtualsk.com/current_issue/the_badlands.html)
- Lead the discussion towards the significance of the cultural value of water. Describe how water is so important for life that people create stories, myths, legends and religious beliefs around water. Among Greek, Chinese and First Nations cultures water is considered one to be one of the four elements
- Introduce the importance of air. Say, “Just as water is one of the four elements so is air? Did you know that air is an important symbol in just about culture around the world? Why would that be?”
- Have the students hold their breath to illustrate its importance. Emphasize how the importance of air for life is more immediate than water or food.
- Describe the cultural importance of air for First Nations people. For First Nations air is one of the four elements. It can give life or take it. In a strong storm, winds can destroy buildings and hurt people but without air we can't live.
- Read through the activity: ‘The Importance of Water and Air’ with the students. Read Sophie’s story. Assign the students to interview their relatives about the value of water in their culture. It may be necessary to do one example so that student may understand.

Baptism (20 min)

- Read the baptism of Jesus to the students.
- Ask students if they have witness or have been to a baptism.
- Read through the activity ‘Baptism’ with the students. Describe the sacrament of baptism to the students. Explain that in baptism we become one with Jesus and his family the church. Baptism washes away all our sins (including original sin but at this age, describing original sin may be tricky and students may not be old enough to understand); baptism initiates us into the church and allows the baptized to receive other sacramental rites such as reconciliation and Eucharist. During baptism we are given grace and sealed with the gifts of the Holy Spirit. Lastly baptism grants the remission of sins, in other words, we are forgiven for our sins.
- Teachers may wish to explain how most Catholics are baptised as infant but that some adults choose to become catholic through RCIA.
- Display the symbols of baptism if possible describe and show through pictures or the objects themselves.
- Explain each symbol and action as a classroom after

a) Oil of chrism.

Describe how oil of chrism blessed by the bishop is used to anoint the candidate. This oil symbolizes the act of sealing with the gifts of the Holy Spirit.

1241 The *anointing with sacred chrism*, perfumed oil consecrated by the bishop, signifies the gift of the Holy Spirit to the newly baptized, who has become a Christian, that is, one "anointed" by the Holy Spirit, incorporated into Christ who is anointed priest, prophet, and king.⁴¹ (CCC1241)

b) **Water:** washes away sin and we are born into new life through the Holy Spirit.

1238 The *baptismal water* is consecrated by a prayer of epiclesis (either at this moment or at the Easter Vigil). The Church asks God that through his Son the power of the Holy Spirit may be sent upon the water, so that those who will be baptized in it may be "born of water and the Spirit."⁴⁰

c) **Light/fire:** Describe that the candle represents how we as followers of Jesus are called to be light to the world. Light also represents how we now have Jesus in us.

White garment: Baptism washes us from sin. The white garment shows how we have 'put on Christ'.

1243 The white garment symbolizes that the person baptized has "put on Christ,"⁴² has risen with Christ. The *candle*, lit from the Easter candle, signifies that Christ has enlightened the neophyte. In him the baptized are "the light of the world."⁴³ (CCC1243)

The Importance of Water to People in the Old Testament (30 min)

- Through the activity, 'The Importance of Air and Water to People in the Old Testament' with the students.
- Where possible teachers may even wish to read the actual story from the Old Testament.
- Create a list of ways that water and air may have been very important for the Israelites. Discuss types of clothing, transportation, tools like water skins that may have used. Some useful sites and information include:

a) Ancient Hebrew people who were tribal and lived inland used boats that introduced from other cultures:

<http://www.bible-history.com/isbe/S/SHIPS+AND+BOATS/>

b) Fish and other foods lived in the sea and these supported communities that lived by the sea. Some of the apostles were fisherman before they joined Jesus.

http://www.bible-history.com/links.php?cat=2&sub=258&cat_name=Ancient+Israel&subcat_name=Manners+%26+Customs

c) Water would be crucial for agriculture. In ancient Israel a strong agricultural culture developed. Types of plants such as wheat, oats, barley, figs, dates, spices and fruits grew in the Middle East.

d) Clothing protected from the elements like wind and rain:

http://www.womeninthebible.net/3.3.Clothing_housing.htm

- Then after a discussion have students illustrate ways that water was important to the Israelites or stories about water and air in the Old Testament.

Activity: The Importance of Water and Air

Water has a special importance for many cultures. For some cultures it is even considered sacred. Sacred means so special that we respect it like we would a church. First Nations people in Saskatchewan believe that water is sacred. They don't worship water but they believe it is very special. They believe that water makes up many things; that is why they call it an element. For them, water has the power to take life and to give life. Water can take life, drowning, if we're not careful and we don't respect water's power. Water also gives life. When rain falls on the prairies flowers grow; hillsides become green with life.

Another special symbol that means life is air. Hold your breath for a minute and you will see how important it is. How long you could live without air. A minute or two? Just like water, for First Nations people in Saskatchewan, air or wind is the fourth element. It makes up many things. They believe that air can give life but air in the form of strong winds can take life. Air and the gifts it brings, cool breezes, drying winds, storm winds need to be respected.

How are air and water important in your culture?

Investigate:

Ask your mom, dad, uncle or aunt, grandparents what water means in your culture or how water is important to your family. An example is given to you below. It is Sophie's story. Write out your findings below.

Sophie's story:

My name is Sophie and I am nearly six years old. I am Chinese, Vietnamese and Scottish Canadian. My Chinese name is Mui Hong which means 'Beautiful Phoenix'. My dad was born in Vietnam but my grandparents are Chinese. Water is important to my family because water means new life. It was escaping by boat that we lived. There was a war in Vietnam. My dad (who was three years old), my aunt (who was just six months) and my grandparents escaped from the fighting. They hid inside a boat and travelled down a river out onto the ocean. My dad also says that his dad taught him that water is one of the four elements in Chinese culture. The Chinese believed that earth, air, water and fire make up all things. Because we're also Catholic we believe that water means new life in baptism. Water means new life for us.

Air is the breath for life. I learned from my dad that that for Chinese people air is one of the four elements that makes up everything. My dad says that in Chinese legends, dragons breathe in air and out comes fire. In some pictures and in some legends dragons float and fly on air. My dad, my mom, my grandpa and my great grandpa are all dragons. Dragons are lucky.

Baptism

In the New Testament when we learn about the life of Jesus, we also understand how water is important. For example, when Jesus begins his mission, he is baptized by John in the river Jordan. At the wedding at Canaan Jesus changes water into wine. When a storm rises at sea, Jesus calms the waters to show his disciples the lesson of faith. Jesus even walks on water! Before the passion, Jesus washes his disciples' feet to show them that the greatest leaders need to be a servant first. Jesus used water to teach many important lessons.

In our faith water has many important meanings. The greatest meaning for water in our faith is baptism. Baptism is a sacrament. A sacrament is a special rite that uses signs that we can see to help people understand God's love and His grace. We believe that God's spirit is there with us during a sacrament. When anyone wished to become Catholic they are baptised but most Catholics are baptised as babies. In baptism a priest pours water over the forehead of the person who is baptised. Sometimes a person is completely immersed in water. Water from baptism washes away sin. Baptism is a way we become people of God.

There are five symbols of faith in baptism: Water, light, a white garment, sign of the cross and chrism oil. As a class you will discuss their meaning. Draw each symbol in the box below and write out their meaning.

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Fire\light	White garment	Sign of the Cross
Oil	water	

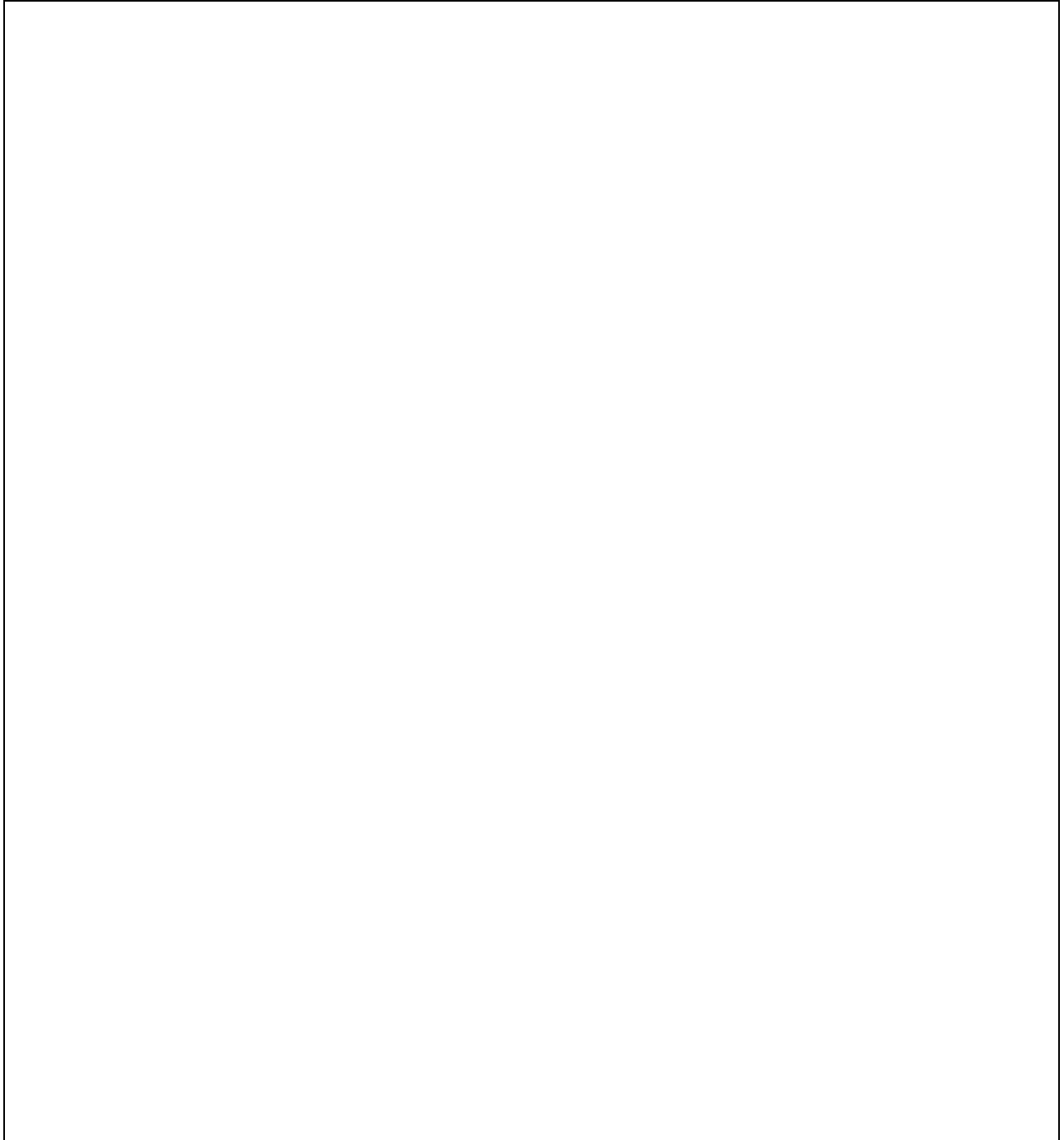
The Importance of Air and Water to People in the Old Testament

Water is so important for life; it is what we think of most if we're dying of thirst. For the people in the bible water was so important it was mentioned 719 times! That's more mention than prayer or faith. Only the name of God and Jesus, hope and love are mentioned more than water in the bible. How about that!?

If we look to the bible we'll see many examples where water plays a role. For example, in the beginning, before God separates light from darkness, there is water. God separates water from the earth from the water in the sky. Then after God creates the world and people, He makes a magnificent garden called Eden through which run rivers of water. As people grew wicked God allows a great rain to fall. A great flood drowns all the life on earth. Only Noah, his family and the ark full of animals live. Water is mentioned in the story of the Exodus when Moses saves the Israelites from bondage. The red sea and its waters wash away the Egyptian Pharaoh who tries to kill the fleeing Israelites. As the Israelites wander in the desert, dying of thirst, God saves them again. He commands Moses to hit a rock and out comes water. These are just some of the stories from the Old Testament about water.

What about air? How is it important for the ancient Israelites? In the first book of the bible, it says that God breathed life into the first man. The air in the form of wind was special signs that God used to show his power in the bible. People in the Old Testament knew that winds blowing from different directions could change the weather. Cool breezes that came from the sea brought nice cold relief but hot drying winds from desert could parch. In the bible sometimes when the word air or wind is used it is used to describe the spirit of God. So when God breathed in the first man, God didn't just fill Adam's lungs but He filled Adam with His spirit.

In the box below draw a picture of why water or air was important to the people of the Old Testament. It could be a picture from an Old Testament story or from an idea that you discussed with your teacher.



Lesson 2: How We Can Protect Water and Air Resources?

Purpose: In this lesson students will understand how and why we need to be good stewards of air and water.

Outcomes: AW2.2 Assess the importance of air and water for the health and survival of living things, including self, and the environment.

- c. Recognize the importance of air and water as two of the four elements (i.e., air, water, earth, fire) in Mother Earth in First Nations, Métis, and other cultures.
- d. Explain how living things, including humans, require clean air and water for breathing, cooling, drinking, cooking, bathing, and prevention of illness to maintain a healthy body.
- h. Suggest explanations for how air and water in the environment can become polluted.
- i. Suggest ways that individuals can contribute to protecting and improving the quality of air and water in their environment (e.g., conserving water, not pouring chemicals down the drain, not burning hazardous materials, and reducing travel via motorized vehicles).
- j. Propose an answer to a question or problem related to the importance of air and water for living things.

Time required: 45 min

Instructional Procedure:

- Show the following clips on air and water pollution:
- Discuss what the students saw.
- Define with the students the concept of resource. Describe briefly the water cycle to students so they understand that water can be recycled and we could never run out of water if we manage water properly. Stress however, that water can be misused. Describe how water is scarce in some parts of the world while here in Canada it is abundant.
- Have the students imagine that a water ban is in effect for their community. Because of a drought, water has to be limited. Have them brainstorm a list of things they couldn't do because there isn't enough water.
- Post the list. Have students reflect for a moment how their life might be different if the water ban was permanent. Have them consider how their life might be like if they had to walk two miles to get water, couldn't have a regular bath, their parents couldn't easily wash clothes with machines, water lawns, cars or have access to a water park or swimming pool.
- Have students share their ideas.
- Ask students to consider where water and air come from. Who does water and air belong to? Stress that water and air are gifts from God so that all people, all living things might benefit from water.
- Help students to understand and to appreciate that water or air, being gifts from God, need to be protected. Ask, "How do we protect air and water?"
- Introduce and read the activity: 'How Can You Protect Air and Water?' with the students.
- In pairs or in groups students have students answer the question "Can you think of ways that people misuse water?" In the box in the activity, have the students write or draw some of their ideas. Beside each answer have students explain how misuse of air and

water might hurt plants, animals or people. Cue students to think about what they saw in the video clips and in previous discussions. Have generate solutions to the problem and Discuss them with a friend or in a group.

- Make a pledge with feasible goals that students will do. For example:
 - “I pledge to take shorter showers each night so that I don’t waste water.”
 - “I will walk to school because driving creates air pollution.”
 - “I will ask my parents not use chemicals to spray bugs and weeds in the garden because these might get into drinking water, lakes or streams.”

- Then for a week or two, or as long as the class decides, students will agree to live their pledge.

Activity: How Can You Protect Air and Water?

Air and water are precious resources. A resource is anything that people use for their needs. Resources like the water we drink and air we breathe are gifts from God. How should we treat those gifts? Think about a special gift you were given for your birthday. What did it mean to you? We have to treat gifts from God with great care and respect. We’re very lucky; we live in a country that has lots of fresh drinking water. In some countries like Congo in Africa where water isn’t easily found, children walk miles to get water for their villages. In most places in Canada, the air we breathe is clean but big cities like Toronto have so much air pollution that sometimes people can’t go outside.

People can misuse resources. We can create pollution that makes a resource unclean or unusable. For example, when oil that humans take from the earth, spills into a lake or a river or the ocean, it adds chemicals to the water. The wildlife that lives in the water or use the water can die from the chemicals.

Can you think of ways that people misuse air or water? Write or draw some of your ideas in the boxes below. Beside each answer tell how that misuse might hurt plants, animals or people. Discuss them with a friend or in a group.

Ex.

Ways we misuse water or air	Ways we hurt things that depend on the water and air
Ex. Soap from washing our clothes ends up in streams and rivers.	Ex. The chemicals from the soap might hurt the animals that live in the water.

Then after you have created a list of ways that people pollute or misuse air and water, think of ways we can protect them. Write or draw your ideas below.

