



Saskatchewan Catholic Schools Curriculum Permeation

REVEALING CHRIST IN ALL WE TEACH

SCIENCE 4

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 4

Faith Permeation Essential Connections

Unit Theme: Habitats and Communities

In this unit provincial curriculum specifies that students are expected to learn and understand how plant and animal communities survive in their habitats. Students explore how human activities may affect animal and plant habitat. This unit's faith permeation lesson deals with this particular outcome. Students will learn about God's plan for plant and animal life on earth. They will also learn how to care for particular habitats in their milieu and they'll understand the meaning of Catholic stewardship.

Provincial Curriculum Outcomes and Indicators Addressed:

Outcome: HC4.1 Investigate the interdependence of plants and animals, including humans, within habitats and communities.

d. Discuss stories that demonstrate the interdependence of land, water, animals, plants, and the sky in traditional worldviews.

e. Draw upon facets of Indigenous worldviews, such as the Medicine Wheel or circle of life, to examine understanding about the interdependence of plants and animals in various habitats and communities.

Outcome: HC4.3 Assess the effects of natural and human activities on habitats and communities, and propose actions to maintain or restore habitats.

a. Recognize and discuss the role of traditional knowledge in learning about, valuing, and caring for plants and animals within local habitats and communities.

c. Categorize human activities by the effects they have or may have on habitats and communities.

d. Assess intended and unintended consequences of natural and human-caused changes to specific habitats.

h. Create dramatic, visual, musical, or other representations to show how personal actions can help conserve, honour, and respect natural and constructed habitats.

Catholic Faith Focus for Learning:

In this unit students will learn that all plant and animal life belong to God. Ecological communities and habitats reveal God's glory and his goodness. Plants, animals and other resources are meant to be used wisely for our good, the good of other people and for future people.

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

- **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
- **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.
- **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.
- **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.

Catholic Faith Essential Skills:

- Students will learn what it means to be good stewards of plant and animal life.
- Students will understand that animals were made by God and their existence reveals God's glory.
- Students will understand how animal and plant life ought to be treated.

Catholic Faith Essential Questions:

- 1) What is stewardship? How do Catholic values and virtues guide our sustainable use of plant and animal life for our good, our neighbor's good and the future good of the next generations?
- 2) What is God's relationship to the animals and to the plants?
- 3) How are we to treat plant and animal life?

Teacher Note:

These faith permeation lessons aim to follow and to complement three key sources: Fully Alive (FA), Pearson Saskatchewan Science 4 (PSS4) and Come and See (CS4). When these resources are referenced in following lessons and mini-lessons they will be abbreviated.

Lesson 1: A Habitat in the bible**Description:**

Building on what the student has learned about habitats and shelters in PSS4 in this lesson the students will learn about God's relationship to living things, in this case the birds. The lesson will help students appreciate that God provides for all his creatures and that He provides for all animals, giving them what they need. The biblical example also serves as an analogy for the kingdom of heaven. Students by extension learn about how God provides for people in his kingdom and how He makes a habitat for them in the Church.

Required time: 1 hour

Instructional Procedure:

- This lesson is taught after students have grasped on the concept of habitat and shelter. It is meant to compliment the Get Started on pg. 6-9 in PSS4.
- Begin with a review of habitats, communities and shelters. Help students understand that habitat is an ecological environment that provides for all the needs of living things while a shelter is a place where organisms may find temporary shelter from weather and from predation.
- Provide students with the handout Lesson 1: A Habitat in the Bible. Have students in small groups read the activity. When they are finished have them reassemble in a large group.
- Ask, "How many people believe that the mustard tree served as a habitat for the birds?" Survey the students.
- Ask, "How many believe that the mustard tree is only a shelter for the birds?"
- Invite students to provide their reasoning for either answer.
- Explain that in the context of the biblical passage, Jesus states that birds nest in the branches. Frame the discussion in this way. Pose the question, "Jesus states in the parable that the birds nest in its branches. If so, is the mustard tree a shelter or a habitat? Explain your thinking."
- Re-evaluate the criteria of a habitat and compare them to Jesus' description of the mustard seed.
- Then draw the students' attention to biblical scholars' debate about what the actual mustard seed plant may be.
- Ask, "Is the plant that scientists and scholars the one that Jesus described in the parable?"
- Invite a discussion.
- Ask, "Are there some contradictions?"

- Help students realize that the mustard seed in the bible is perhaps not the same as the mustard plant *Brassica nigra* but if the biblical mustard plant is *Brassica nigra*, it may not be large enough for birds to nest as Jesus had described. Write down evidence from the text which suggests that the biblical plant may or may not be the actual plant *Brassica nigra*.
- Ask, “If the biblical plant is actually *Brassica nigra*, and does not grow big enough for birds to nest in, why did Jesus make this exaggeration? Why didn’t Jesus use the example of an acorn?” Through these questions help students understand that Jesus wants us to learn that our church had very humble beginnings. Our origin was insignificant to everyone except for those who really understood that Christ was the Messiah and the son of God. It is possible that Christ used the example of the mustard seed growing large enough for birds to nest in because people of his time would understand that impossibility. Like the mustard seed, that the early beginnings of the kingdom of heaven on earth were small and very fragile but impossibly that our faith would grow into the world religion that is today seemed impossible too. Yet it grew and the lesson to learn is that all is possible through Faith.
- Leave the students with a final task, pose the question: “Where do you nest in the branches of God’s mustard tree? Without answering aloud, have students draw a mustard plant, and describe through pictures how they nest in the habitat that God has made us in his Church. How are ways that students respond to God’s invitation to nest in the mustard tree?”
- If time permits have student share their illustrations.

Example of student work:

Questions to think about:

1. Why would Jesus use the example of a mustard plant instead of a tree?

✓ like the Kingdom of God it starts really small and grows really fast
 ✓ God's Kingdom is impossible
 ✓ like the mustard plant.

2. The mustard plant might be a habitat or a shelter for birds. How might God’s kingdom be a shelter or a habitat for us?

✓ the Kingdom of God gives us shelter from sins. Gives us food
 ✓ the body of Christ.

Lesson 2: Environmental Stewardship

Description:

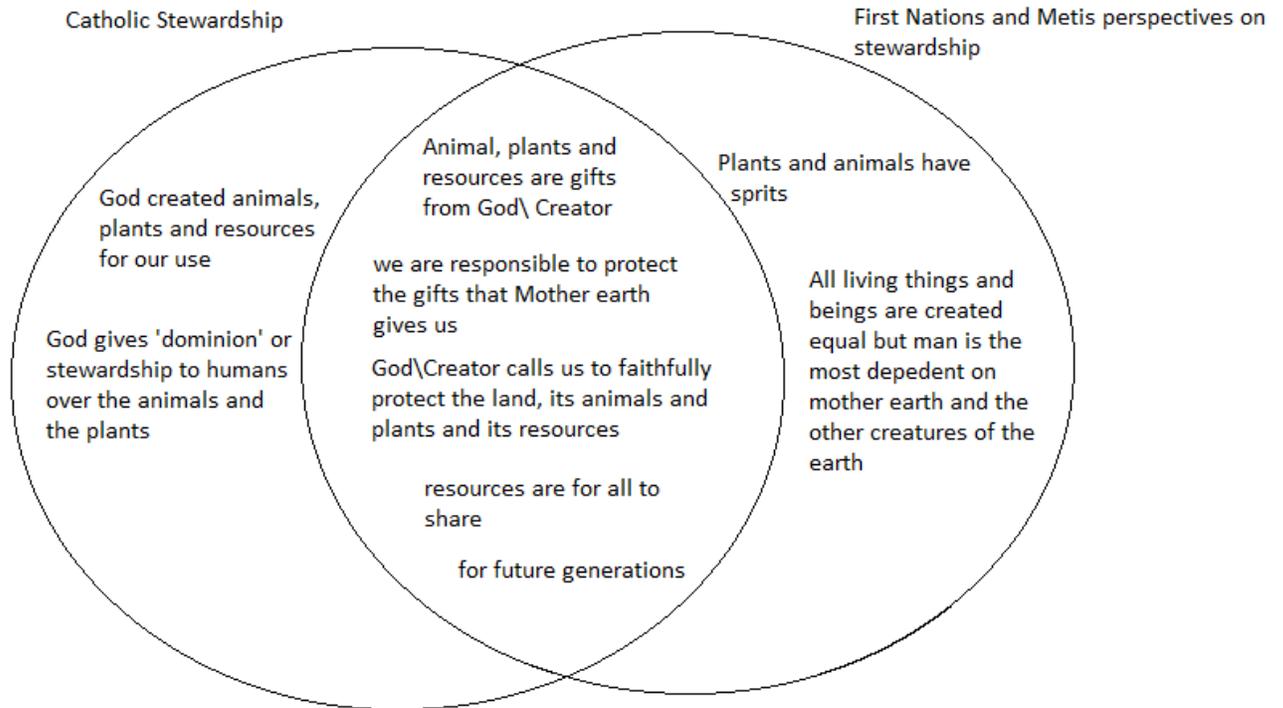
This is lesson students learn that although God's plants and animals are for our use we need to respect these gifts and use them wisely.

Required time: 20 minutes

Instructional Procedure:

- This lesson coincides with information found in Get Started on pg. 16 of PSS4 and lesson 10 on pg. 34-36 and lesson 11 on pg. 36 in PSS4.
- Provide students with the handout Lesson 2: Environmental Stewardship.
- Read through the activity sheet with the students.
- Discuss and help define clearly the idea of stewardship through the use of a Venn diagram. In a Venn diagram compare and contrast First Nations and Metis views of steward with the Catholic view of stewardship.
- Ask "How are these views similar? How are they different?" Use information from the handout to complete the Venn diagram.
- Ask the following questions to understand and ascertain student understanding:
 - a) What are the key parts of stewardship?
 - b) What does the Church teach us about how we are to treat plant and animal life?
 - c) Through the examples of the Saints listed on your handout, how should we treat the animals?
- Introduce the field journal activity. Read the instructions with the students carefully.
- Provide an example of a complete field trip entry for the students to see.
- Then provide students with 5 minutes each day to observe a particular habitat or microhabitat around the school. These particular habitats could consist of:
 - Spider webs
 - School gardens
 - Fields
 - School yard
 - Small habitats along fence lines
 - Ant hills
 - Flower bed
 - Sand pits and edges of the sand pit
 - Treed areas
 - Under picnic tables
- Collect student field journals.

Venn Diagram: Compare and Contrast Catholic Stewardship and FNM perspectives on Stewardship



Extension activity:

If time permits or if there is genuine interest in the Saints mentioned in lesson 2, have students research them. Helpful sites include:

a) St. Brigit (St. Brigid)

<http://www.obrien.ie/files/extracts/festivecooking-stbrigid.pdf>
http://media.wix.com/.../a84285_5d7396922572aa9cf3aa71bc8bb9d3e2.p...

<http://saintbridget.net/stbridget.htm>

Under cow there is a reference to St. Brigid:

http://www.isle-of-skye.org.uk/celtic-encyclopaedia/celt_c5c.htm

b) St. Anthony

<http://www.saintanthonyofpadua.net/portale/santantonio/miracoli/santo/mirac3.asp>

<http://www.st-anthony-medal.com/patronage-of-saint-anthony.htm> <http://www.st-anthony-medal.com/patronage-of-saint-anthony.htm>

c) St. Francis

http://www.catholic.org/saints/saint.php?saint_id=50

http://www.holyspiritinteractive.net/kids/saints/1004_francis.asp

d) St. Columba

Under crane, there is a reference to St. Columba

http://www.isle-of-skye.org.uk/celtic-encyclopaedia/celt_c5c.htm

Difficult reading: teachers will have to help students read the following - It has an account of Columba directing his followers to care for cranes.

<http://www.allmercifulsavior.com/icons/Icons-Columba.htm>

Trading Card Example:

Example of St. Anthony trading cards that teachers may wish to print to show as an example to their students.

http://www.thatresourcesite.com/Resources/saintstudy/Tradingcrds/st_anthony_of_padua.pdf

Instructions to the students:

Research the story of a St. Mentioned in the handout. Create a trading card that has a picture of your saint, a short story that the animal or plant for which this saint is known, and present your findings to your peers.

Appendix A Black line Masters

Lesson 1: A Habitat in the Bible

A habitat is a place where animals and plants live. In the bible we can learn how God makes a habitat for all his creatures. Jesus uses an example of a shelter or a habitat for birds to teach a lesson. He uses the mustard tree as an example to teach people about the kingdom of Heaven.

Luke 13.19 says, “[The Kingdom of Heaven] is like a mustard seed that someone took and sowed in the garden; it grew and became a tree, and the birds of the air made nests in its branches.’

Jesus taught that God’s kingdom is like a mustard seed. Our Church began with only a few people, small like a tiny mustard seed. But in time, God’s kingdom would grow to become great like the mustard tree and becomes a place for birds to live. Like the branches of the mustard tree God’s kingdom reaches and branches out too. In the branches of God’s kingdom we can find a place to be. Good things like hope, love, joy, peace, compassion and respect grow among its branches. In this activity we’ll compare the mustard seed to God’s kingdom. We’ll see how mustard tree grows and examine how birds may nest among its branches. Then later we’ll see how people like the birds might find safety in God’s kingdom.

The mustard seed:

The mustard seed in the parable is not the same kind of plant that is used to make mustard for our hotdogs. The mustard tree that is mentioned in the bible is actually a weed that grows in Africa or the Middle East. It can grow nearly as tall as eight feet with wide thick stems.

The mustard tree is a green weed which has beautiful yellow flowers. One special feature, called an adaptation, which helps the mustard tree survive, is ability to go grow very quickly. In a matter of a few months, the mustard tree can grow from tiny black seeds to a plant of eight or nine feet.

People in the Middle East, use the seeds of the mustard tree to make spices. In India it is used to make a special kind of mustard.

Can birds actually live and nest among the mustard plants?

Bible scholars are people who study the bible. Most Scholars think that the plant mentioned in the parable is really *Brassica nigra*, the black mustard plant. This plant grows tall and makes black seeds but there are some people that doubt the mustard plant was strong enough for birds to make nests. Other scholars argue that a full grown mustard plant had branches big enough to support small birds as they fed on the seeds of the plant. What do you think? How would we know?

If the mustard plant *Brassica nigra* can't support a bird's nest it isn't a habitat. But if it gives the bird some protection it is called a shelter.

Questions to think about:

1. Why would Jesus use the example of a mustard plant instead of a tree?
2. The mustard plant might be a habitat or a shelter for birds. How might God's kingdom be a shelter or a habitat for us?

Lesson 2: Environmental Stewardship

When you walk over the lawn or perhaps when you've littered, have you ever considered how your actions affected the environment and habitat of the plants and animals around you?

In your science textbook you read that First Nations and Metis people call the planet Mother Earth. The Earth is like a mother to us because she gives us all they need to live and thrive. Mother Earth gives plants and animals what they also need to live. Because we depend on animal and plant life to live, First Nations and Metis people believe that animals and plants are sacred and need to be carefully protected. In the past and to the present day, when First Nations and Metis people killed a plant or animal, they offered tobacco as an offering of respect and they used every part of the plant or animal. These people believed that if they treated the animal and plant life with respect Creator would bless them and future generations

with abundant plant and animal life which could be used for food, shelter, and clothing. This is the First Nations and Metis understanding of stewardship.

Our Church has a similar view. The way we protect animal and plant habitats, carefully manage earth's resources, its green spaces and ecosystems for future people is called Stewardship. Catholic stewardship is the understanding that God calls us to be faithful caretakers of the gifts he gives us.

The bible teaches us that the gifts God gives us, the plants and animals, are good in God's eyes. Ancient people who wrote the bible, believed that plants and animals, even the creepiest kind, were good in God's sight. **Genesis 1.24:** *And God said, 'Let the earth bring forth living creatures of every kind: cattle and creeping things and wild **animals** of the earth of every kind.'* *And it was so. God made the wild **animals** of the earth of every kind, and the cattle of every kind, and everything that creeps upon the ground of every kind. And God saw that it was good.*

And we learn from Jesus that God even cares and provides for the small sparrow. So shouldn't we?

How are we to treat the Earth's plants and animals?

Because our actions have consequences we need to think about how we treat animals and plants and their habitats. Because we believe that all the living things on earth are gifts from, we need to treat them with the greatest respect, even reverence. The Catholic Church teaches us that:

- Plants and animals are a gift from God.
- They show God's glory.
- They meant for our wise use such as clothing and food.
- We must treat animals and plants kindly.

Steward Saints and Animals

Did you know that...

- St. Francis spoke to the animals.
- St. Anthony of Padua preached to the fish.
- St. Brigid of Ireland coaxed cows into giving milk for the hungry.
- St. Columba taught his followers to protect cranes.

Reflection:

Instructions:

Scientists keep field journals when they study habitats. They keep a record of things that they see and think about. For the next week you will keep a field journal. The journal will contain your ideas about what you observe in your area but your field journal will be a bit different. This field journal will also be a way for you to be thankful for the world you live in.

Take five minutes each day to sit at a difference location in your school yard. There you will observe the habitats of living things under your feet, around you, in the sky above you. As you spend your five minutes think about the following questions:

1. How have humans affected the habitat of the living things that used to be here?
2. In what ways can you show the living things in this habitat respect?
3. Do one thing that will help the living things in this habitat. (examples- pick up a piece of litter, give the plants some water, leave the animals alone)

When you have thought about these questions fill out your journal

Date: My Field Journal Name:

The area I studied is _____.

The kind of habitat that used to be here was _____.

People affected this habitat by:

-
-
-

Ways that we can show respect to this place are:

-
-
-

My prayer of thanksgiving:

Lord Jesus

I thank you for _____ and _____

(Name two animals or plants that you see in this area)

Help me to be a good steward of your creation.

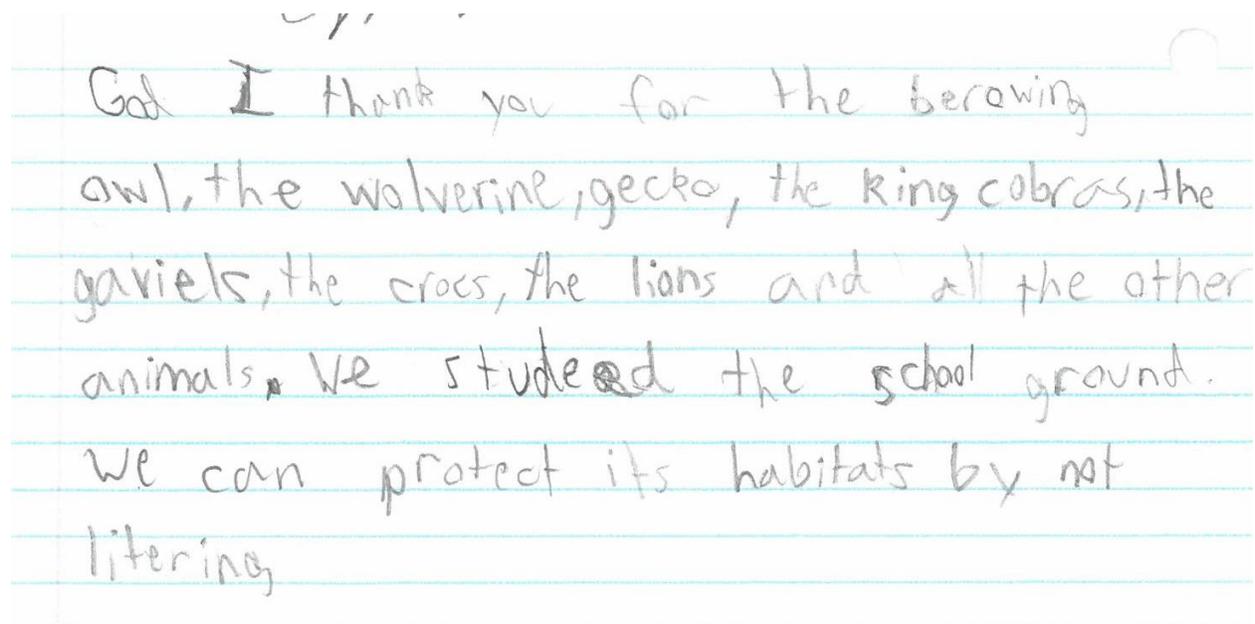
Show me how my actions might help make this habitat a better place for the animals and plants here.

Amen.

My action

One thing I will do for this habitat is.....

Example of student prayer:



God I thank you for the beautiful owl, the wolverine, gecko, the king cobras, the gaviels, the crocs, the lions and all the other animals. We studied the school ground. We can protect its habitats by not littering.

Appendix B: Table of Correlation

Faith Permeation lesson	Pearson Saskatchewan	Outcome and	Catechism of the	Gospel/ biblical references/	Christian Ethics resources
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Documents	Science 5	Indicator	church	Church documents and encyclicals	
Lesson 1: A Habitat in the Bible	Get Started on pg. 6-9	HC4.1 d, e	2415 2416 2417 2418	Luke 13.19	Jesus the parabler theme 8 and Parables are Kingdome stories theme9 , unit 3 (Come and See)
Lesson 2: Environmental Stewardship	Get Started on pg. 16 of PSS4 and lesson 10 on pg. 34-36 and lesson 11 on pg. 36 in PSS4.	HC4.3 a,c,d,h	2415 2416 2417 2418	<i>Genesis 1.24</i>	Not applicable

Appendix C: Catechism of the Catholic Church

- **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
- **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.
- **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.
- **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.

Appendix D: Interesting reading for teachers

http://www.bbc.co.uk/religion/religions/christianity/christianethics/animals_1.shtml

Appendix E: Saint Prayers

Prayer to St. Anthony

Gentle Servant of God St. Anthony, Help me find ways to honor God's blessings by showing my love for all of God's creatures. Share your strength that I may cope with the trials and troubles of daily life. You, through whose voice the Word of God was preached, intercede for my need (mention your special request here). Powerful Patron, be with me always and teach me to reach out in love and support to others.

AMEN.

Prayer to St. Francis for Animal

Good St. Francis, you loved all of God's creatures.
To you they were your brothers and sisters.
Help us to follow your example
of treating every living thing with kindness.
St. Francis, Patron Saint of animals,
watch over my pet
and keep my companion safe and healthy.
Amen.

Appendix F: Scripture about living creatures

Proverbs 12:10, The righteous man regards the life of his beast.

Genesis 9: I will make a covenant with you and with all living creatures.

Exodus 23: If you see an animal that is overburdened, you should lighten its load to help it.

Job 12: 7-10: Ask the birds, ask the beasts and they will teach you.

Genesis 1.24: And God said, 'Let the earth bring forth living creatures of every kind: cattle and creeping things and wild animals of the earth of every kind.' And it was so. God made the wild animals of the earth of every kind, and the cattle of every kind, and everything that creeps upon the ground of every kind. And God saw that it was good.

The provincial outcomes for this unit provide little opportunity for faith permeation. Outcome LI4.1 indicator “c” asks students to identify and learn about the significance of light from traditional First Nations and Metis perspectives. That indicator has been expanded to explore the cultural significance of light from a Catholic perspective.

Provincial Curriculum Outcomes and Indicators Addressed:

Outcome: LI4.1 Investigate the characteristics and physical properties of natural and artificial sources of light in the environment.

c. Examine the significance of light in First Nations and Métis stories, legends, and spirituality, including the role of fire, lightning, aurorae, and Thunderbird.

Catholic Faith Focus for Learning:

In our faith we believe that Christ is the light of the world. That imagery helps us to compare a tangible example that of light to an intangible reality: faith, salvation, life and hope in our God. Students will learn the significance of the light and symbolism in our faith

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

748 "Christ is the light of humanity; and it is, accordingly, the heart-felt desire of this sacred Council, being gathered together in the Holy Spirit, that, by proclaiming his Gospel to every creature, it may bring to all men that light of Christ which shines out visibly from the Church." [135] These words open the Second Vatican Council's Dogmatic Constitution on the Church. By choosing this starting point, the Council demonstrates that the article of faith about the Church depends entirely on the articles concerning Christ Jesus. The Church has no other light than Christ's; according to a favorite image of the Church Fathers, the Church is like the moon, all its light reflected from the sun. (CCC248)

John 1.1-9

¹In the beginning was the Word, and the Word was with God, and the Word was God. ²He was in the beginning with God. ³All things came into being through him, and without him not one thing came into being. What has come into being ⁴in him was life, and the life was the light of all people. ⁵The light shines in the darkness, and the darkness did not overcome it.

⁶ There was a man sent from God, whose name was John. ⁷He came as a witness to testify to the light, so that all might believe through him. ⁸He himself was not the light, but he came to testify to the light. ⁹The true light, which enlightens everyone, was coming into the world.

John 8.12:

Again Jesus spoke to them, saying, ‘I am the light of the world. Whoever follows me will never walk in darkness but will have the light of life.’

Catholic Faith Essential Skills:

- Students will be able to explain and understand the imagery and symbolism of light in our faith.

Catholic Faith Essential Questions:

- What role does the imagery of light play in our faith?

Teacher Notes:

- This lesson coincides with Get Started lesson 1 ‘Why is light Special’ in PSS4 pg. 52 and this lesson is an adaptation of the light activities and liturgy in CS4.

Faith Permeation Lessons:

Lesson 1: Celebration of Light

Description:

In this lesson students will learn and appreciate the significance and symbolism of light in The Catholic faith. If this light unit can be taught to coincide with the celebration of the ‘Epiphany’ then that would be most appropriate. However, that timeline may not always be possible. This lesson can be taught in spite of the timing.

In this lesson students will participate in a classroom faith celebration in order to experience the importance and the symbolism of light. Materials needed for this class include:

- A Christ Candle
- A bible
- cross
- A cd player (optional)
- The song, “Here I am to Worship” by Chris Tomlin
- The song, “Children of the Light”
- Candles that students have made in a related CS4 activity which can be found on pg. 151 in the teacher’s guide.
- Cinquains that students have prepared. This activity and explanation is found in CS4 pg. 150 of the teacher guide.

Required time: 1 hour

Instructional Procedure:

- Before the celebration have items listed above ready. Place a prayer table in the center of the classroom.
- Invite the students to prepare to celebrate Jesus as the light of the world.
- Connect science learning and faith by providing an explanation like this, “In our first lesson we learned about why light is so special to people around the world. We learned that special cultural stories were told by First Nations people to explain natural light phenomena such as auroras and lightning. They used the cultural to explain the natural,

while we as Catholics use the natural to explain the spiritual. We have our own faith stories that help us understand how light arises.”

Celebration

Gathering:

- Ask the students to begin to prepare their hearts. Shut any lights to make the classroom as dark as possible.
- If possible meet in a darkened hallway to have a good procession.
- The following celebration is an adaptation of ‘A Celebration of Light’ in CS4.
- Bring the Bible, the Christ Candle which is already lit and the cross.
- The children will bring the unlit candles that they have made.
- When everyone is there, sing a short antiphon you already know, (suggestion: ‘Eucharistic Acclamation’ No. 7 year 3 *In the Spirit We Belong*)
- This will get silence, focus everyone and get them ready for the celebration.

Greeting:

Presider: In the name of the Father, Son and Holy Spirit.
The Lord be with you.

All respond: And with your spirit.

Presider: John the Baptist prepared the way.
Joseph and Mary said ‘yes’ to God’s word.
The shepherds heard the angels and went to Bethlehem.
The wise men saw the star and journeyed to the crib.
Anna and Simeon greeted him in the Temple.
Today we welcome him in our hearts, our class and our lives.

Presider: We know that in a world without light there is only darkness.
Jesus said, “I am the light of the world. Whoever follows me will never walk in darkness but will have the light of life.”
In silence we ask God to bless to bless our candles.

- Allow some time for silence. Invite everyone to light their candles from the Christ Candle and to hold them high.

Presider: Blessed be the Holy Spirit who gathers us today.
Blessed be Jesus the light of the world.
Blessed be God, Father, Son and Holy Spirit.
We ask you to bless the candles we have made and bless our class who joyfully carry them in praise of your name.

We ask this through our Lord Jesus Christ, your Son who lives and reigns with you in the unity of the Holy Spirit, one God for ever and ever.

- Then the procession starts (with the Cross leading, followed by the Christ Candle and the Bible). Everyone else follows, holding their lighted candles high and signing a familiar hymn that does not require books or sheets. You may wish to use a cd (suggestion: 'Here I am to Worship' by Chris Tomlin.)
- When the children in the procession have reached the prayer table, they enthrone the Bible and put the cross and Christ candle in place.
- The presider invites everyone to bow their heads in silent prayer.

Presider: Shine upon us today O God, the source of all light. Brightened by the glow of all these candles may we recognize your Son, Jesus, in the word; and like Anna and Simeon, may we welcome him into our lives and joyfully proclaim him to the world. We ask this through our Lord Jesus Christ, your Son who lives and reigns with you in the unity of the Holy Spirit, one God for ever and ever.

Proclamation of the Word

- (optional: if the season permits) Greet the world of the God by singing a familiar gospel acclamation that fits the Christmas season. You may wish to sing "Gospel Acclamation (Christmas) (No. 13) from year 3 *In the Spirit we Belong*.

Reader: The gospel according to Luke

When the time came for their purification according to the law of Moses, they brought him up to Jerusalem to present him to the Lord (as it is written in the law of the Lord, 'Every firstborn male shall be designated as holy to the Lord'), and they offered a sacrifice according to what is stated in the law of the Lord, 'a pair of turtle-doves or two young pigeons.'

Now there was a man in Jerusalem whose name was Simeon; this man was righteous and devout, looking forward to the consolation of Israel, and the Holy Spirit rested on him. It had been revealed to him by the Holy Spirit that he would not see death before he had seen the Lord's Messiah. Guided by the Spirit, Simeon came into the temple; and when the parents brought in the child Jesus, to do for him what was customary under the law, Simeon took him in his arms and praised God, saying, 'Master, now you are dismissing your servant in peace, according to your word; for my eyes have seen your salvation, which you have prepared in the presence of all peoples, a light for revelation to the Gentiles and for glory to your people Israel.'

And the child's father and mother were amazed at what was being said about him. Then Simeon blessed them and said to his mother Mary, 'This child is destined for the falling and the rising of many in Israel, and to be a sign that will be opposed so that the inner thoughts of many will be revealed—and a sword will pierce your own soul too.'

There was also a prophet, Anna the daughter of Phanuel, of the tribe of Asher. She was of a great age, having lived with her husband for seven years after her marriage, then as a widow to the age of eighty-four. She never left the temple but worshipped there with fasting and prayer night and day. At that moment she came, and began to praise God and to speak about the child to all who were looking for the redemption of Jerusalem.

When they had finished everything required by the law of the Lord, they returned to Galilee, to their own town of Nazareth. The child grew and became strong, filled with wisdom; and the favour of God was upon him.

The gospel of the Lord.

All: Praise to you Lord Jesus Christ

Ritual Action:

- Have several children in turn read their cinquains of light out loud. The cinquains must be prepared in advance.

Closing:

- Join hands in a circle and pray the Our Father. Conclude with the sign of peace and the song, "Children of the Light".
- After the celebration concludes, teachers may wish to debrief with students about the symbolism of the light and why it is so important in our faith.
- Ask, "What are some places in the story of our faith where we see the importance of light?" Generate a list through brainstorming:

Possible answers: Jesus as the light of the world, In the beginning God made the light, Rainbows as a covenant to people, candles burning at church, Hanukkah important to the Jewish people, the star of Bethlehem, the transfiguration of Christ, Pentecost and the holy tongues of fire, light descending upon Jesus at his baptism.

Appendix A: Table of Correlation

Faith Permeation lesson Documents	Pearson Saskatchewan Science 5	Outcome and Indicator	Catechism of the church	Gospel/biblical references/ Church documents and encyclicals	Christian Ethics resources
Lesson 1: Celebration of Light	Get Started on pg. 52	LI4.1 c	748	Luke 2.22-40	Pg. 150-1512 of CS4 teacher guide

Appendix B: Songs for the celebration

Here I am to worship

Light of the world, You step down into darkness.
 Opened my eyes let me see.
 Beauty that made this heart adore you hope of a life spent with you.

[Chorus]

And here I am to worship,
 Here I am to bow down,
 Here I am to say that you're my God,
 You're altogether lovely,
 Altogether worthy,
 Altogether wonderful to me.

King of all days,
 Oh so highly exalted Glorious in heaven above.
 Humbly you came to the earth you created.
 All for love's sake became poor.

[Chorus]

Here I am to worship,
 Here I am to bow down,
 Here I am to say that you're my God,
 You're altogether lovely,
 Altogether worthy,
 Altogether wonderful to me.

I'll never know how much it cost to see my sin upon that cross.
I'll never know how much it cost to see my sin upon that cross.
And I'll never know how much it cost to see my sin upon that cross.
No I'll never know how much it cost to se my sin upon that cross.

[Chorus]

Here I am to worship,
Here I am to bow down,
Here I am to say that you're my God,
You're altogether lovely,
Altogether worthy,
Altogether wonderful to me.
So Here I am to worship,
Here I am to bow down,
Here to say that you're my God.

Children of The Light

We are children, children of the light
We are shining, in the darkness of the night
Hope for this world, joy through all the land
Touch the heart of everyone, take everybody's hand
Come and gather round the flame,
Share the light in his name
We are children of the light
As the wind blows where it will
Spread the news to everyone
There's still plenty of time
For we have just begun

We are children, children of the light
We are shining, in the darkness of the night
Hope for this world, joy through all the land
Touch the heart of everyone, take everybody's hand
Join the song of all the earth
We've a dream a dream to share
And a promise of rebirth
Let the earth feel the warmth
Of the love there in your heart
We have many a dream and promises to keep

We are children, children of the light
We are shining, in the darkness of the night
Hope for this world, joy through all the land
Touch the heart of everyone, take everybody's hand
We are children, children of the light
We are shining, in the darkness of the night

Hope for this world, joy through all the land
Touch the heart of everyone, take everybody's hand

Appendix C: Catechism of the Catholic Church

748 "Christ is the light of humanity; and it is, accordingly, the heart-felt desire of this sacred Council, being gathered together in the Holy Spirit, that, by proclaiming his Gospel to every creature, it may bring to all men that light of Christ which shines out visibly from the Church." [135] These words open the Second Vatican Council's Dogmatic Constitution on the Church. By choosing this starting point, the Council demonstrates that the article of faith about the Church depends entirely on the articles concerning Christ Jesus. The Church has no other light than Christ's; according to a favorite image of the Church Fathers, the Church is like the moon, all its light reflected from the sun. (CCC748)

Appendix D: Scriptural references to Jesus as Light

Matthew 4.16: the people who sat in darkness have seen a great light, and for those who sat in the region and shadow of death light has dawned.'

Matthew 5.14: 'You are the light of the world. A city built on a hill cannot be hidden.

Matthew 5.15-16: No one after lighting a lamp puts it under the bushel basket, but on the lampstand, and it gives light to all in the house. In the same way, let your light shine before others, so that they may see your good works and give glory to your Father in heaven.

Matthew 6.23: but if your eye is unhealthy, your whole body will be full of darkness. If then the light in you is darkness, how great is the darkness!

Luke 1.79: to give light to those who sit in darkness and in the shadow of death, to guide our feet into the way of peace.'

Luke 11.35: Therefore consider whether the light in you is not darkness.

Luke 11.36: If then your whole body is full of light, with no part of it in darkness, it will be as full of light as when a lamp gives you light with its rays.'

John 1.1-9: ¹In the beginning was the Word, and the Word was with God, and the Word was God. ²He was in the beginning with God. ³All things came into being through him, and without him not one thing came into being. What has come into being ⁴in him was life, and the life was the light of all people. ⁵The light shines in the darkness, and the darkness did not overcome it.

⁶ There was a man sent from God, whose name was John. ⁷He came as a witness to testify to the light, so that all might believe through him. ⁸He himself was not the light, but he came to testify to the light. ⁹The true light, which enlightens everyone, was coming into the world.

John 3.19: And this is the judgement, that the light has come into the world, and people loved darkness rather than light because their deeds were evil.

John 8.12: Again Jesus spoke to them, saying, 'I am the light of the world. Whoever follows me will never walk in darkness but will have the light of life.'

Science 4

Faith Permeation Essential Connections

Unit Theme: Sound

In the sound unit two curricular outcomes and their indicators provide opportunities to explore faith in science of sound. In this unit students will appreciate the importance of sound and how music is used to worship God.

Provincial Curriculum Outcomes and Indicators Addressed:

Outcome: SO4.1 Explore natural and artificial sources of sound in the environment and how those sounds are detected by humans and animals.

b. Relate natural and artificial sources of sounds in their environment to the ways in which those sounds are produced.

d. Explain how humans and other animals use sounds for various purposes such as enjoyment, warning, navigation, annoyance, ambience, and communication.

Outcome: SO4.3 Assess personal, societal, and environmental impacts of sound-related technologies.

g. Explore the importance and uses of sound in different cultures, past and present.

Catholic Faith Focus for Learning:

Catholic Faith Big Ideas (answers to the essential questions)

1156 "The musical tradition of the universal Church is a treasure of inestimable value, greater even than that of any other art. The main reason for this pre-eminence is that, as a combination of sacred music and words, it forms a necessary or integral part of solemn liturgy."²⁰ The composition and singing of inspired psalms, often accompanied by musical instruments, were already closely linked to the liturgical celebrations of the Old Covenant. The Church continues and develops this tradition: "Address . . . one another in psalms and hymns and spiritual songs, singing and making melody to the Lord with all your heart." "He who sings prays twice."²¹ (CCC1156)

1157 Song and music fulfill their function as signs in a manner all the more significant when they are "more closely connected . . . with the liturgical action,"²² according to three principal criteria: beauty expressive of prayer, the unanimous participation of the assembly at the

designated moments, and the solemn character of the celebration. In this way they participate in the purpose of the liturgical words and actions: the glory of God and the sanctification of the faithful.²³ (CCC 1157)

How I wept, deeply moved by your hymns, songs, and the voices that echoed through your Church! What emotion I experienced in them! Those sounds flowed into my ears distilling the truth in my heart. A feeling of devotion surged within me, and tears streamed down my face - tears that did me good.²⁴

1158 The harmony of signs (song, music, words, and actions) is all the more expressive and fruitful when expressed in the *cultural richness* of the People of God who celebrate.²⁵ Hence "religious singing by the faithful is to be intelligently fostered so that in devotions and sacred exercises as well as in liturgical services," in conformity with the Church's norms, "the voices of the faithful may be heard." But "the texts intended to be sung must always be in conformity with Catholic doctrine. Indeed they should be drawn chiefly from the Sacred Scripture and from liturgical sources."²⁶ (CCC1158)

Catholic Faith Essential Questions:

- 1) How does the Church view music for worship?
- 2) What is the importance of music in the celebration of Mass?

Teacher Note:

- This lesson coincides with information found on pg. 103-104 in PSS4.

Lesson 1: Sacred Sounds and Music

Description:

In this lesson students will explore the importance that sounds and music have in the church.

Required time: 1 hour

Instructional Procedure:

- Open the lesson by reviewing the importance of sound and the mean that sound has on various cultures. In their text students learn that a sound can have many meanings. For example a bell can be a call to the classroom, to dinner or even to church.
- Explain that in our Catholic tradition which is a culture with its own set of norms, values, beliefs and ideals sound like the role of the jingle dresses in FN culture, sounds have great importance to Catholics.
- Ask, "What role does sound play in the Catholic Church?" Have students brainstorm a list of ideas.
- The list might include:
 - a) Bells as a call to mass
 - b) Under the old rites, Chimes and a bell played after the priest has consecrated bread and wine
 - c) Sounds from instruments to make music

- d) Sound of voices in prayer, worship, readings and song
 - e) Sounds of babies crying which signal that the church is vibrant with young children.
 - f) Sounds of people crying for their deceased loved ones
 - g) Chanting voices
 - h) Footsteps of the procession and recession
 - i) Squeaking of kneelers
 - j) Rustling of clothing
- Explore and discuss the items on the student brainstorm list.
 - Then have the students close their eyes and imagine what mass might be like without sound. Have the students write down a list of things they would miss if sound didn't exist in the mass.
 - For example students might list:
 - a) Not understanding the parts of the mass, the readings or the homily
 - b) Might miss sounds like the rustling of clothing which would signal time to rise
 - c) The squeaking of the kneelers that signal consecration
 - d) The parts of the mass that are sung
 - e) The music
 - Ask, "Of the sounds that you would miss most about mass which sound would you miss most?" This question should elicit the response 'music'.
 - Make this statement, "Mass might not be exactly the same. In fact we might miss a very important part of worship without music? Why is music so important to the mass?"
 - Lead a discussion. Write down on chart paper a list of reasons why music is important. Help students realize that music is:
 - a) A form of prayer.
 - b) A way we adore and praise God
 - c) Way we connect to God
 - d) the highest art form according to the church because it combines sacred music and prayer.
 - e) Part of the liturgy
 - f) There are songs that prescribed for liturgy, that are suitable for certain seasons in the church calendar that are reserved for certain parts of the mass.

Extension activities:

- a) Play the following clip:

<http://www.reuters.com/video/2008/05/16/singing-monks-hit-the-big-time?videoId=82554>

or

<http://www.youtube.com/watch?v=pYPFkjrkdno>

Debate: Since the earliest time of the Catholic Church, chanting has been considered the oldest form of worship. Many of the church leaders hundreds of years ago considered it the highest form of music. Do you agree or disagree? Give two reasons why you might support or argue against this comment.

- b) Have students research and bring their favorite hymn or sacred music to school. Invite students to present these songs and why these songs are important to them. Play a few favorite hymns and discuss their importance to you.
- c) Discuss the role of instruments in Church. Debate the following statement: Be it resolved that instruments like electric guitars and drums should not be played at Church, during the mass even if the instruments are played as ways to worship God.
- d) Write a song that worships God. Your song may give thanks to God, may express how music is a gift or how music might touch you.

Culminating Activity: Live Theatre Modified

The culminating activity for this unit adapts the design project in PSS4 on pg. 140-141 to include elements of faith. In the section ‘work on it’ students are asked to use the sounds they have collected and instruments they have created to make a story, play or presentation. Teams must decide what role each member will be, director, actor, writer or sound effects technician. They must incorporate instruments and 5-8 sound effects in their presentation. The students choose theme or topic in their presentation. A modification of this activity to include elements of faith might encourage the students to delve into a faith related topic. Rather than leaving the activity completely open ended teachers may provide students an opportunity to enact a parable, gospel story, an Old Testament story or a short saint story. Students may retell a gospel, parable, or Old Testament story in their own words or students may read from scripture. Provide students with the handout ‘Culminating Activity’ in appendix A to scaffold their experience.

Teachers may also use the rubric that PSS4 provides for this activity in the PSS4 teacher guide. However an alternate culminating rubric is listed below. It follows the criterion listed in the assessment checklist on pg. 141 in PSS4 student book. Rubric criteria considers the student content, sounds used in the activity, timing of the sounds and realism of the sound effects used.

Sound Unit Culminating Activity rubric:

criteria	Level 1	Level 2	Level 3	Level 4
Content:	The story is read but	The students have rehearsed the story but it	The story is well rehearsed and actions match the	The story is well

<p>Is the story well told, well written, read from the scripture?</p> <p>Do students perform their roles well?</p>	<p>not rehearsed.</p> <p>Elements and Storyline in students-composed works are unclear. Plot isn't clear, characters are poorly created.</p> <p>Actions don't match the narrative.</p> <p>Student tasks and roles are not clearly defined.</p>	<p>is clear they need more practice.</p> <p>Elements of student composed works are somewhat unclear.</p> <p>Their actions somewhat matched the narrative.</p> <p>Students have clearly defined roles as actors, director, sound technician etc.</p>	<p>story.</p> <p>Elements of students composed work are clear and their actions match their narrative.</p> <p>Students work effectively at their roles some of the time.</p>	<p>rehearsed.</p> <p>Elements of the student composed work are clear and effective. Elements such as plot are clear to audience.</p> <p>The actions match the story and are well timed.</p> <p>Students play their roles effectively. Students are on task.</p>
<p>Sounds\mood\feelings</p>	<p>The sounds that are chosen seldom match the feelings students wish to illicit from crowd.</p> <p>The sounds produced seldom sound realistic.</p> <p>The sounds are seldom played at the right time</p>	<p>The sounds that are chosen don't match the feelings students wish to illicit from crowd some of the time.</p> <p>The sounds produced sound somewhat realistic.</p> <p>The sounds are sometimes played at the right time.</p>	<p>The sounds that are chosen match the feelings students wish to illicit from crowd most of the time.</p> <p>The sounds produced are often realistic.</p> <p>The sounds are often played at the right time.</p>	<p>The sounds that are chosen always match the feelings students wish to illicit from crowd. The choices of sound are very appropriate.</p> <p>The sounds produced are very realistic sounding.</p> <p>Timing of sounds is exact.</p>

Appendix: A Black Line Masters:

Culminating Activity: Live Theatre

In your textbook in the section called ‘work on it’ on pg. 141 you’ve been asked to use the sounds you have collected and instruments you have created to make a story, play or presentation. You must decide what role each team member will play

- Director
- actor,
- writer
- sound effects technician.

Criteria:

- You must include the instruments you made into your presentation. You must decide when to use the instruments in your story.
- You must include 5-8 sound effects in your presentation.
- You may choose any theme or topic for your presentation but you might like to enact a parable, gospel story, an Old Testament story or a short saint story. You may retell a gospel, parable, or Old Testament story like:
 - a) Gospel stories: The passion of Jesus, the nativity, baptism in the Jordan, Pentecost.
 - b) Old testament stories: Jonah and the whale, Samson, The prophet Daniel and the lions, Moses and the exodus, Noah’s ark.
- You may rewrite the bible story in your own words or you may choose to read the bible story.
- Below is a rubric criteria which shows you how you will be evaluated. Your teacher will assess you on your roles, how well the story is performed, and the sounds you used in the activity, timing of the sounds and how realist the sound effects are. Use the rubric to help you create and design your story.
- Put your ideas into the tables below:
 In this table you will write down your role on the team and state what your job is and is not.
 Ex. My Job is...

My Job is...	My Job is not...
Ex. If I am the director my job is to help actors know their place on stage My job is to help make sure the actor’s	Ex. As a director my job is not to boss everyone around. My job is not to choose everyone else’s job.

actions match the script.	
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My Job in the play is: _____

My Job is...	My Job is not...

The story we have chosen is _____

Parts of the story that have a sound effect	The sounds that our team will use

Places where we've decided to use our musical instruments are.....

Sound Unit Culminating Activity Student rubric:

Criteria	Level 1	Level 2	Level 3	Level 4
Content: Is the story well told, well written, read from the scripture? Do students perform their roles well?	The story is read but not rehearsed. Parts of our story like the plot aren't clear. The audience doesn't understand who the characters are and what the story is about.	We have rehearsed the story but it is clear we need more practice. Parts of our story are somewhat unclear. Our actions somewhat matched our story.	Our story is well rehearsed and our actions match the story. Most parts of our story are clear. We clearly defined our roles as actors, directors, sound	Our story is well rehearsed and polished. All parts of our story such as plot and characters are clear to audience. The actions match the story and are well

	<p>Our actions don't match the story.</p> <p>We haven't clearly decided our jobs in the presentation.</p>	<p>We have clearly defined our roles as actors, director, sound technician etc.</p>	<p>technicians etc.</p> <p>We work effectively at our roles some of the time.</p>	<p>timed.</p> <p>We all played our roles effectively and we were on task.</p>
Sounds\mood \feelings	<p>The sounds that are chosen don't match the feelings we wanted to make the audience feel. For example the scary sounds weren't scary.</p> <p>The sounds produced seldom sound realistic.</p> <p>The sounds are seldom played at the right time</p>	<p>The sounds that we chose gave the audience the right feeling some of the time.</p> <p>The sounds produced sound somewhat realistic.</p> <p>The sounds are sometimes played at the right time.</p>	<p>The sounds that are chosen match the feelings students wish to illicit from crowd most of the time.</p> <p>The sounds produced sound often realistic.</p> <p>The sounds are often played at the right time.</p>	<p>The sounds that are chosen always match the feelings we wish to the audience to feel. The choices of sound are very appropriate.</p> <p>The sounds produced are very realistic sounding.</p> <p>Timing of sounds is exact.</p>

Appendix B: Table of Correlation

Faith Permeation lesson Documents	Pearson Saskatchewan Science 4	Outcome and Indicator	Catechism of the church	Gospel/ biblical references/ Church documents and	Christian Ethics resources
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				encyclicals	
Lesson 1: Sacred sounds and music	pg. 103-104 in PSS4	SO4.1 b,d SO4.3 g	1156 1157 1158	2 Samuel 6.5 1 Chronicles 6.32 2 Chronicles 29.27 Nehemiah 12.46 Psalm 26.7 Psalm 98.4 Ephesians 5.19 Colossians 3.16 <i>The role of the arts music and images in the encounter with the divine in the "cosmic liturgy"</i> cardinal Joseph Ratzinger. Musicae Sacrae encyclical Pope Pius XII	N\A
Culminating activity	Pg. 140 PSS4	SO4.1 b,d SO4.3 g	1156 1157 1158	2 Samuel 6.5 1 Chronicles 6.32 2 Chronicles 29.27 Nehemiah 12.46 Psalm 26.7 Psalm 98.4 Ephesians 5.19 Colossians 3.16 The role of the arts music and images in the encounter with the divine in the "cosmic liturgy" cardinal Joseph Ratzinger. Musicae Sacrae encyclical Pope Pius XII	N\A

Appendix D: Some scriptural references to Song

2 Samuel 6.5: David and all the house of Israel were dancing before the Lord with all their might, with songs and lyres and harps and tambourines and castanets and cymbals.

1 Chronicles 6.32: They ministered with song before the tabernacle of the tent of meeting, until Solomon had built the house of the Lord in Jerusalem; and they performed their service in due order.

2 Chronicles 29.27: Then Hezekiah commanded that the burnt-offering be offered on the altar. When the burnt-offering began, the song to the Lord began also, and the trumpets, accompanied by the instruments of King David of Israel.

Nehemiah 12.46 For in the days of David and Asaph long ago there was a leader of the singers, and there were songs of praise and thanksgiving to God.

Psalms 26.7: singing aloud a song of thanksgiving, and telling all your wondrous deeds.

Psalms 98.4: Make a joyful noise to the Lord, all the earth; break forth into joyous song and sing praises.

Ephesians 5.19: as you sing psalms and hymns and spiritual songs among yourselves, singing and making melody to the Lord in your hearts,

Colossians 3.16: Let the word of Christ dwell in you richly; teach and admonish one another in all wisdom; and with gratitude in your hearts sing psalms, hymns, and spiritual songs to God.

Appendix E: Interesting reading for teachers:

<https://sites.google.com/a/stpaulcatholic.net/parish/sacraments/eucharist-liturgy-of-he-eucharist/questions-about-the-liturgy-of-the-eucharist-holy-mass/what-are-the-eight-myths-about-church-music>

Science 4 Faith Permeation Essential Connections

Unit Theme: Rocks, Minerals and Erosion

This unit on rocks, mineral and erosion has predominant science themes for which inclusion of faith is limited. However outcome two requires that students assess the uses that people have for rocks and minerals. The uses come with benefits and harm to self, society and the environment. Like other similar outcomes when issues concern the health of people and the environment, stewardship plays a role. In this unit students will apply their knowledge of environmental stewardship applied to the exploitation of rocks and minerals.

Provincial Curriculum Outcomes and Indicators Addressed:

Outcome: RM4.2 Assess how human uses of rocks and minerals impact self, society, and the environment.

- a. Discuss ways in which people of different cultures value, respect, and use rocks and minerals, including First Nations and Métis connections to Mother Earth.
- h. Analyze issues related to the extraction and use of minerals from the perspectives of various stakeholders (e.g., company owner, employee, scientist, Elder, environmental group, and end user).
- i. Research ways in which products made from rocks or minerals can be recycled and reused.
- k. Assess their own and their family's impact on natural resources based on their current lifestyle.

Catholic Faith Focus for Learning:

- Students will learn that exploitation of minerals, drilling for oil and mining have benefits and social and environmental costs.
- Students will appreciate that as Catholics our values need to guide our decisions to mine and to extract minerals. Our decisions need to consider all benefits and costs for people of today and tomorrow.
- Students will understand and appreciate the position of the Catholic Church on the stewardship of natural resources for human activities like mining and resource extraction.

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

- People must have regard for the needs of others and cultivate a way of life that includes sharing our goods with others, protecting the earth and God's gift for all people and for the generations of people to come.
- 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. (CCC #2415)
- The dominion granted by the Creator over the mineral, vegetable, and animal resources of the universe cannot be separated from respect for moral obligations, including those toward generations to come. (CCC #2456)
- We must re-establish the links with nature that we have damaged. We now know that we are tied much more closely to the environment in which we live than we had imagined. Our planet is a spacecraft on which we navigate together with the environment, for better and for worse. As Saint Paul says, "the whole creation has been groaning in labour pains until now," in the hope "to be set free from its bondage to decay" (Romans 8.22 and 21). Is development that is more respectful of nature's laws and rhythms not a first step toward its freedom? (Canadian Conference of Catholic Bishops-Our Relationship with the Environment: a need for conversion)
- The issue of the environment, now so crucial, ties us to one another as never before. Selfishness is no longer merely immoral, it is becoming suicidal. We no longer have a

choice about new solidarity and new forms of sharing. (Canadian Conference of Catholic Bishops-Our Relationship with the Environment: a need for conversion)

- Are we not like the prodigal son who asked his father for his inheritance and then left home and proceeded to waste it (Luke 15.11-32)? In our drive to earn more, to possess more, to consume always more, we have sacrificed a great deal to the economic almighty, which has become like the substance of modern life. We have mismanaged the Garden of Eden entrusted to us. It has lost part of its integrity and beauty. (Canadian Conference of Catholic Bishops-Our Relationship with the Environment: a need for conversion)

Catholic Faith Essential Skills:

- Students will understand the role that environmental stewardship plays when it comes to resources exploitation.
- Students will understand the benefits and the costs of mineral extraction in Saskatchewan and how our catholic values must inform our decision to mine.

Catholic Faith Essential Questions:

- 1) How should we treat the earth and its resources?
- 2) How can we minimize our impact to the earth during extraction of earth's resources?
- 3) How can we be good stewards of earth's mineral and rock resources?

Lesson 1: Saskatchewan's Resources

Teacher Note: This lesson is taught in conjunction with information learned on pg. 184 in PSS4. For this activity teachers will need the following materials:

- a) Cookies one for each team member (4 members to a team).
- b) One tool for each member a flat toothpick, round toothpick, straws or popsicle sticks.

Description:

In this activity students will mine chocolate chips with randomly assigned tools. Each student will mine their resource based on the statement given to them on a values cards. Each values card will give students ideas about how they need to mine their cookie and how they will pile up their chocolate chips. By the end of the activity students should be able to explain what values guided their mining practices and how the resources were divided up.

Required time: 1 hour

Instructional Procedure:

- Provide each student with a copy of the activity, The Crumbling Cookie.
- Read over the activity with the students.
- Divide students into teams of four.
- Have one member of each team to come up and collect tools and cookies.

- Instruct students not to eat their cookies. Then assign each team a set of values card. These values card are to be selected at random by each member of the team.
- Provide students roughly three minutes to read over their values card. Explain that student need to ‘mine’ their chocolate chip resource based on the values listed on the card. Then when students are finished extracting the chips they are to make piles to represent the wealth of the shareholders involved. For example, in mining company economics values card a student might decide to create a very large pile of chips for the company, a smaller one for the royalties that the government collects, and another for people who work for the company.
- Then allot five minutes for the students to mine their cookies.
- When they have finished have the students answer the questions on their handouts. When these are done, they may share their thinking with their peers.
- Reassemble into a large group and discuss the findings with the group.

Appendix A: Black Line Master

Activity: The Crumbling Cookie

In this activity you will learn about how extracting resources under Saskatchewan’s soil has social and environmental costs as well as benefits. How we choose to develop mines or to drill for oil needs to be based on good values. How do our values help us decide our choice?

For this activity you will need chocolate chip cookies of different kinds. At random your teacher will assign you each a different kind of cookie. The cookie itself is the earth and the chocolate chips are resources that you will ‘mine’ from the cookie.

Each student will be given a different tool. One will receive a flat toothpick; another a round tooth pick and the third will receive a straw. You may not trade or give away your tool.

Each student will be given a card. On each card there will be a value listed that will guide how you are going to mine your resource. Follow the values carefully.

When the teacher gives you the signal, you may begin to extract the ‘mineral’ (chocolate chips) from the cookie. You will have five minutes to extract your ‘resources’. When your group is done discuss the following questions. Each person will present their values and the answers to the question below:

Question:

1. What were the values that guided your mining process?
2. How did you divide your riches into piles? Why did you divide your riches that way?

After all participants have provided their answers to questions 1 and 2 answer question 3.

3. Which principles did you agree with? Which ones fit your values?

Value Cards: Cards that teachers assign to students at random.

Value One: Mining Economics

Resources are meant for companies to make money. People all over the world may benefit from our resources. Our minerals are used in many products that people need. Some people get employment from our mines and we pay the government of Saskatchewan some money for the right to mine. In general people need our resources but the goal of our company is to make money. We follow the government's environmental rules.

If these are your values, how would you mine? Would you mine carefully protecting the earth (the cookie part of the cookie) or would do you care that your cookie crumbles while you extract the chips? How will you distribute the chocolate chips to people or to yourself?

Value Two: Catholic Environmental Stewardship

The earth and its resources are gifts from God. We have a responsibility to the earth. We are concerned for the quality of life and the health of our fellow human being. We need to mine carefully and use only what we need so that future generations have resources too. The minerals that come from the earth are gifts from God and should be used to maximize the good of all people, not just a few or for industry. But above all we have to ensure that less harm is done to the earth.

If these are your values, how would you mine? Would you mine carefully protecting the earth (the cookie part of the cookie) or would do you care that your cookie crumbles while you extract the chips? How will you distribute the chocolate chips to people or to yourself?

Value three: First Nations and Metis perspectives

We believe that Creator made Mother Earth to gives us shelter, life and food. She and all others created in nature have a spirit, a part of the Creator lives in them because it was He who made them. Therefore we believe that all things on earth are sacred and must be protected. We believe that for anything that we take from the earth we must be give something back. Therefore we offer tobacco to Mother Earth before we take something from the land. We know that mining would help our reserve and our people but sometimes we wonder if the cost is too great. In our treaties we agreed to share the land with the Europeans.

If these are your values, how would you mine? Would you mine carefully protecting the earth (the cookie part of the cookie) or would do you care that your cookie crumbles while you

extract the chips? How will you distribute the chocolate chips to people or to yourself?

Value four: a Miner’s perspective

We work in the mine. It is our livelihood. Our work benefits people. Mines give lots of people like us jobs in Saskatchewan but it can be dangerous work. We have different values about why we mine. For some of us it is just a job but for others this is a vocation and we believe that the work we do makes a difference. Think about how well your house, a building or your car might be without the metals that we mine. Would it even be possible?

If these are your values, how would you mine? Would you mine carefully protecting the earth (the cookie part of the cookie) or would do you care that your cookie crumbles while you extract the chips? How will you distribute the chocolate chips to people or to yourself?

Appendix B: Table of Correlation

Faith Permeation lesson Documents	Pearson Saskatchewan Science 4	Outcome and Indicator	Catechism of the church	Gospel/ biblical references/ Church documents and encyclicals	Christian Ethics resources
Lesson 1: Saskatchewan’s resources	pg. 184 in PSS4	RM4.2 a, h, k, i	#2415 #2456	Romans 8.22 and 21 Luke 15.11-32 Canadian Conference of Catholic Bishops-Our Relationship with the Environment: a need for conversion	N\A

Appendix C: Catechism of the Catholic Church

2402 People are the recipients of God’s divine love and gifts. As stewards of creation we are committed to the care of creation in a sustainable fashion. God has entrusted all the living things of the earth and all of the earth’s resources into our care. Through our labor humans harvest, reap and take the products of the earth for our needs. These gifts are for all people to use. (CCC #2402).

2415 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. (CCC #2415)

2456 The dominion granted by the Creator over the mineral, vegetable, and animal resources of the universe cannot be separated from respect for moral obligations, including those toward generations to come. The dominion granted by the Creator over the mineral, vegetable, and animal resources of the universe cannot be separated from respect for moral obligations, including those toward generations to come. (Compendium of the Catechism of the Catholic Church #2456)