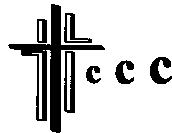


Integrating Science and Technology
and
Catholic Curriculum Maps

Grade 7

Understanding Life Systems Strand

Interactions in the Environment



**Catholic Curriculum Corporation
Central and Western Region**

November, 2008

Understanding Life Systems Strand Grade 7

Unit At-A-Glance

<p>Catholic Social Teaching: Human Dignity Essential Question: What is our story? OCSGE: Integrates faith with life (1i) Respects the environment and use resources wisely (7i)</p>	
<p>Topic: Interactions in the Environment Students will analyze some of the impacts humans have on the environment and their consequences, and their personal responsibility to protect the environment. Students will observe existing ecosystems and investigate factors that may affect balance within the system. Students will learn that ecosystems consist of communities of plants and animals that depend on each other as well as the non-living parts of the environment.</p>	
<p>Unit Guiding Question: How do we act as stewards of creation in regards to our effect on ecosystems?</p>	
<p>Unit Culminating Task: Students will create and share a pictorial representation (e.g. slideshow) of an ecosystem that answers the Unit Guiding Question based on the title “science without religion is lame; religion without science is blind” by Albert Einstein (p.70 <u>Believe in Me</u> manual). Include:</p> <ul style="list-style-type: none"> • the harmony that exists between and among biotic and abiotic elements in God’s creation • an outline of our human responsibility as stewards of creation to protect and maintain this harmony • research about how human interferences have destroyed this harmony throughout the world and outline the process needed to restore this harmony from a scientific background (adding a new element, changing an existing element or increasing an existing element) • proposed actions to ensure this harmony is perpetually maintained • an outline of those who are responsible for maintaining this harmony 	
<p>Essential Understandings</p>	
<p>Catholic Curriculum Map: <i>Essential Questions & Links</i></p> <p>Science and Technology: <i>Fundamental Concept(s)</i></p> <p>Science and Technology: <i>Big Ideas and Overall Expectations</i></p>	<p>How do we act as stewards of creation in regards to our effect on ecosystems?</p> <ul style="list-style-type: none"> • Develop an awareness of the Creation Stories • Identify the significance of the Lord’s prayer • Examine and apply responsible decision making • Identify responsibilities they have for themselves and others • Develop an understanding of the need for community and recognize the need for community • Develop an understanding of the role of the individual within the community • Develop an understanding of the need for balance in their lives <p>Sustainability and Stewardship Systems and Interactions</p> <ul style="list-style-type: none"> • Ecosystems are made up of biotic (living) and abiotic (non-living) elements, which depend on each other to survive. (OE 2, 3) • Ecosystems are in a constant state of change. The changes may be caused by nature or by human intervention. (OE 1, 3) • Human activities have the potential to alter the environment. Humans must be aware of these impacts and try to control them. (OE 1)

**Understanding Life Systems Strand
Grade 7**

<p>Science and Technology: <i>Scientific Inquiry Skill</i></p> <p>Science and Technology: <i>Expectation Tag, Guiding Questions & Specific Expectations</i></p> <p>Language Expectations:</p>	<p>Research</p> <p>Relating Science and Technology to Society and the Environment</p> <ul style="list-style-type: none"> • What are the impacts of selected technologies on the environment? (SE 1.1) • What are the costs and benefits of selected strategies for protecting the environment? (SE 1.2) <p>Developing Investigation and Communication Skills</p> <ul style="list-style-type: none"> • What are the safety procedures for investigating ecosystems? (SE2.1) • How can a model ecosystem investigate interactions in ecosystems? (SE2.2) • How do human activities and natural occurrences affect the balance within a local ecosystem? (SE 2.3) • Why is the specific vocabulary necessary for the study of interactions in the environment? (SE2.4) • Which form will communicate my ideas about interactions in the environment with the best results? (SE2.5) <p>Understanding Basic Concepts</p> <ul style="list-style-type: none"> • How are ecosystems organized as a system of interactions between living organisms and their environment? (SE3.1) • What are the biotic and abiotic elements in an ecosystem and what are the interactions that occur between them? (SE3.2) • What are the roles and interactions of producers, consumers and decomposers within an ecosystem? (SE3.3) • How does the transfer of energy occur in a food chain and what are the effects of the elimination of any part of the chain? (SE3.4) • How is matter cycled within the environment and how does it promote sustainability? (SE3.5) • What is the difference between primary succession and secondary succession within an ecosystem? (SE3.6) • Why is an ecosystem limited in the number of living things that it can support? (SE3.7) • What are ways in which human activities and technologies alter balances and interactions in the environment? (SE 3.8) • What are the Aboriginal perspectives on sustainability and what are the ways they can be used in habitat and wildlife management? (3.9) <p>Writing</p> <ul style="list-style-type: none"> • Generate, gather and organize ideas and information to write for an intended purpose and audience (Writing OE 1) OC <p>Oral Communication</p> <ul style="list-style-type: none"> • Create a variety of media texts for different purposes and audiences, using appropriate forms, conventions and techniques (OC OE3)
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Understanding Life Systems Strand Grade 7

Grade 7 Unit Overview				
NOTE: Teachers will need to adjust the suggestions to address the learning needs of their students.				
Subtask	Lesson / Time	Essential Understandings	Assessment	Resources
1	Introduction 1.1 Introduction to the Unit (40 minutes) 1.2 Terminology of the Unit (40 minutes)	Develop an awareness of the creation story Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (OE3) SE2.4, 3.1, 3.2	Direct observation, teacher feedback, rating scale	BLM 1.1A, 1.1B, 1.2, <u>Believe in Me</u> , blackboard, chalk, chart paper, markers, Bible
2	Biotic/Abiotic Elements 2.1 Outdoor Investigation of Biotic/Abiotic Elements (40 minutes) 2.2 Ecosystems (40 minutes)	Develop an understanding of the role of the individual within the community Investigate interactions within the environment, and identify factors that affect the balance between components of an ecosystem (OE 2) Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (OE3) SE 2.1, 2.2, 3.1, 3.2	Checklist, rating scale, teacher feedback, rubric	BLM 2.2A, 2.2B, 2.2C, blackboard, chalk, chart paper, markers, Bible, <u>Fully Alive</u> , <u>Believe in Me</u> , overhead projector, overhead sheets, overhead markers, aluminum foil, apron, coffee grounds, water container, duct tape, lettuce, magnifying glass, metal tab from pop can, newspaper, orange peel, plastic bag, plastic bottle cap, rubber gloves, soil, shoebox, spoon, water, worms
3	Our Damaged World 3.1 Our Damaged World (40 minutes) 3.2 Protecting the World (40 minutes) 3.3 Protecting the World – Continued (40 minutes) 3.4 Cleaning up Our World (40 minutes)	Develop an awareness of the creation story Identify the significance of the Lord’s prayer Examine and apply responsible decision making Identify responsibilities they have for themselves and others Develop an understanding and recognize the need for community Develop an understanding of the role of the individual within the community	Rating scale, direct observation, teacher feedback, checklist	BLM 3.1, 3.4, Bible, <u>Believe in Me</u> , <u>Fully Alive</u> , assorted magazines, newspapers, scissors, glue, blank paper, pencil crayons, markers, chart paper, overhead projector, overhead sheets, overhead markers

**Understanding Life Systems Strand
Grade 7**

		<p>Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts (OE1)</p> <p>SE 1.1, 3.8</p> <p>Language: Create a variety of media texts for different purposes and audiences, using appropriate forms, conventions, and technique (ML OE3)</p>		
4	<p>Where do I Fit in? 4.1 Where do I Fit in? (40 minutes)</p>	<p>Develop an understanding of the need for community and recognize the need for community Develop an understanding of the role of the individual within the community</p> <p>Investigate interactions within the environment, and identify factors that affect the balance between components of an ecosystem (OE 2) Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (OE3)</p> <p>SE1.1</p>	<p>Anecdotal observation, teacher feedback, checklist,</p>	<p>BLM 4.1, Bible, article about a recent ecological disaster, <u>Believe in Me, Fully Alive</u></p>
5	<p>Producer, Consumer, or Decomposer</p> <p>5.1 Producer, Consumer or Decomposer? (40 minutes)</p> <p>5.2 Our Connected World (40 minutes)</p> <p>5.3 Sustainability (40 minutes)</p> <p>5.4 Sustainability – continued (40 minutes)</p>	<p>Develop an awareness of the Creation Stories Identify the need for balance in their lives Examine and apply responsible decision making Investigate interactions within the environment, and identify factors that affect the balance between components of an ecosystem (OE 2) Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (OE3)</p>	<p>Anecdotal observation, written reflection, rating scale, teacher feedback, rubric</p>	<p>BLM 5.2, 5.4, 5.5, 5.6, Bible, reference material on producers, consumers and decomposers, blackboard, chalk, D.P.A. Activity cards, <u>Believe in Me, Fully Alive</u>, Aboriginal story that deals with sustainability, “The Sustainability Report” by</p>

Understanding Life Systems Strand

Grade 7

	<p>5.5 Sustainability – continued (40 minutes)</p> <p>5.6 Our Changing World (40 minutes)</p>	<p>Language: Recognize a variety of text forms, text features, and stylistic elements and demonstrate understanding of how they communicate meaning (R OE2)</p> <p>SE3.3, 3.4, 3.5, 3.6, 3.7, 3.9</p>		<p>Environment Canada</p>
6	<p>Culminating Task</p> <p>6.1 Putting it All Together (160 minutes)</p>	<p>Examine and apply responsible decision making Identify responsibilities they have for themselves and others Develop an understanding of the need for community and recognize the need for community</p> <p>Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts (OE1) Investigate interactions within the environment, and identify factors that affect the balance between components of an ecosystem (OE 2) Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (OE3)</p> <p>SE2.3, 2.5</p>	Rubric	<p>BLM 6.1A, 6.1B, World Wildlife Federation list of eco-regions</p>

Understanding Life Systems Strand Grade 7

Subtask 1: Introduction

“As each one has received a gift, use it to serve one another as good stewards of God's varied grace.” (1 Peter 4:10)

Description

Students will listen to the Creation stories and make a connection to their role in God's plan of creation.

Lesson 1.1 Introduction to the Unit

Purpose

Students will find a connection between the Creation stories and their role in the world. They will be introduced to the culminating task for the unit.

Students will learn about the culminating task: create and share a pictorial representation (e.g. slideshow) of an ecosystem based on the question - How do we act as stewards of creation in regards to our effect on ecosystems?

Essential Understandings

Catholic Curriculum Map Links:

- Develop an awareness of the creation story (4.2 BIM)

Science and Technology:

- How are ecosystems organized as a system of interactions between living organisms and their environment? (SE3.1)
- What are the biotic and abiotic elements in an ecosystem and what are the interactions that occur between them? (SE3.2)

Assessment for Learning

Use direct observation to identify students who are actively contributing to brainstorming session. Provide feedback to students on brainstorming recording.

Rating scale for reflection (BLM 1.1A)

Teacher Notes

Teacher should create a graffiti poster with the title, “How do we act as stewards of creation in regards to our effect on ecosystems?” and post it in the class. As students discover examples of this throughout the unit, the poster should be updated.

Students will be writing personal reflections throughout the unit. A rubric for assessment is enclosed (BLM 1.1A)

You need blackboard, chalk, chart paper, markers, a Bible, BLM 1.1A, 1.1B

Refer to the Believe in Me textbook, unit 4.2 for a further examination of the creation stories.

Understanding Life Systems Strand

Grade 7

Instruction

Time to Teach 15 minutes

- Start lesson with scripture reference (1 Peter 40:10) and have students reflect on meaning.
- Do a read aloud with the whole group of the two Creation Stories (Genesis 1, 2).
- Highlight the key concepts, trying to elicit concepts that there was a specific order to creation, everything was in balance, and humans were put in charge.
- Record ideas on the board for students to copy down.
- Introduce unit topic “Interactions in the Environment”, the unit question “how do we act as stewards of creation in regards to our effect on ecosystems?” and the culminating task.

Time to Practice 15 minutes

- In small groups (5 students) they are to brainstorm using a Mind Map to identify how they personally care for the earth.

Time to Share 10 minutes

- Large group sharing of each Mind Map.
- Students write personal reflection on commonalities found in Mind Maps based on initial scripture reflection.
- Teacher shows pictorial representation of Creation Story using BLM 1.1

**Understanding Life Systems Strand
Grade 7**

BLM 1.1A

Rating Scale for Student Reflections

Student Name: _____

1 = rarely 2 = occasionally 3 = often 4 = constantly

1) Makes text to self connections based on personal past experiences and/or material covered in class as they relate to the topic.

1 2 3 4

Reflective Reasoning -

2) Makes text to text connections based on additional information read or seen as they relate to the topic.

1 2 3 4

Reflective Reasoning -

3) Makes text to world based on outside experiences of the world as they relate to the topic.

1 2 3 4

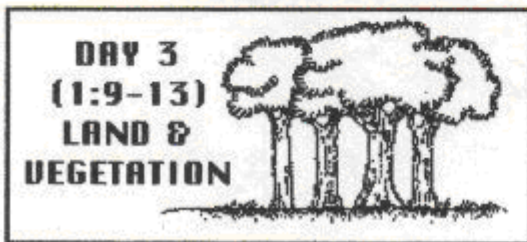
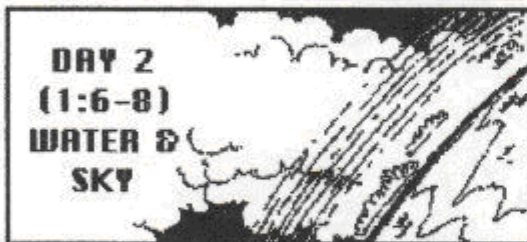
Reflective Reasoning -

Integrating Science and Technology and Catholic Curriculum Maps
Understanding Life Systems Strand
Grade 7

BLM 1.1B

Creation Story Pictorial Reference from Genesis Chapter One

Student Name: _____



Understanding Life Systems Strand Grade 7

“So from the soil Yahweh (God) fashioned all the wild animals and all the birds of heaven. These he brought to the man to see what he would call them; each one was to bear the name the man would give it.” (Genesis 2:19)

Lesson 1.2 Terminology of the Unit

Purpose

Students will learn the terminology for the unit.

Essential Understandings

Catholic Curriculum Map Links:

- Develop an awareness of the creation story (4.2 BIM)

Science and Technology:

- Use appropriate science and technology vocabulary in oral and written communication. (SE2.4)

Assessment for Learning

Use direct observation to identify students who are actively contributing to brainstorming session.

Provide feedback to students on brainstorming recording.

Rating scale for reflection (BLM 1.1A)

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need BLM 1.2 with the final column filled in, Bible

Refer to the Believe in Me textbook, unit 4.2 for a further examination of the creation stories.

Instruction

Time to Teach 10 minutes

- Start lesson with scripture lesson (Genesis 2:19) and have the students discuss the implications (i.e.: we need to stop animals and plants from becoming extinct).
- Students brainstorm terms that will be used in the unit.
- Students will be given a word anticipation guide with the terms already filled in.

Time to Practice 20 minutes

- Students will independently write down their personal definition of the term in the 2nd column.
- Students will work in pairs in to come to a more concise definition and fill in the 3rd column.

Time to Share 10 minutes

- As a whole class the teacher will ask the groups the definitions for the terms.
- Teacher writes down the definition on overhead for all students to copy.
- Teacher asks students why learning the vocabulary is important – they are to write a reflection on this.

**Understanding Life Systems Strand
Grade 7**

BLM 1.2

Word Anticipation Guide

Student Name: _____

Word	What I think it means	Think, Pair, Share	Actual Meaning

Words used:

abiotic, adaptations, biodegradable, biome, biosphere, biotic, carnivore, community, consumer, ecosystem, decomposer, food chain, food web, habitat, herbivore, mirco-organism, omnivore, population, producer, species, succession

Proper definitions:

abiotic - all nonliving things in an ecosystem
adaptations – special features or characteristics that help an organism to survive in a certain environment
biodegradable – when matter decomposes and is recycled into the environment
biome – a region of land with certain organisms (biotic) living within a specific environment (abiotic)
biosphere – the thin layer of life as it exists on this planet
biotic – all living things in an ecosystem
carnivore – an animal that eats other animals
community – a group of organisms living together in a series of relationships
consumer – any organism that feeds on other organisms
ecosystem – how a community of living things exists in a certain environment
decomposer – an organism that breaks down dead organisms, to be recycled into the environment
food chain - organisms linked into a simple pathway by who eats who
food web – a complex network of feeding relationships within an ecosystem
habitat – is the physical setting, in the environment, which an organisms lives
herbivore – an animal that only eats plants
micro-organism – living things that can only be seen with a microscope
omnivore – an animal that eats both plants and other animals
population – a group of organisms that are all the same kind (species) sharing the same environment
producer – an organism (green plants) that can make its own food
species – one kind of organism
succession – how the key species change within an ecosystem over time

Understanding Life Systems Strand Grade 7

Subtask 2: Biotic/Abiotic Elements

“The earth is the Lord's and all that is in it, the world, and those who live in it; for he has founded it on the seas, and established it on the rivers.” (Psalm 24:1)

Description

Students will investigate their local environment and determine the interactions occurring.

Lesson 2.1 Outdoor Investigation of Biotic/Abiotic Elements

Purpose

Students will investigate the local area and make observations about the living and non-living things and any interactions occurring.

Essential Understandings

Catholic Curriculum Map Links:

- Develop an understanding of the role of the individual within the community (1.2, 1.3, 10.2, 10.3 BIM, 5.1 FA)

Science and Technology:

- Follow established safety procedures for investigating ecosystems. (SE2.1)
- Identify biotic and abiotic elements in an ecosystem, and describe the interactions between them (SE3.2)

Assessment for Learning

Checklist of student behavior while working outside. Rating scale for oral presentation with chart paper

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: chart paper, markers, Bible, blackboard, chalk

Teacher needs to record, using a checklist, student behavior (respectful of environment) observed during the outdoor activity.

Student pairs need to be kept in eye contact the entire period outside.

Refer to Believe in Me 1.2, 1.3, 10.2, 10.3 and Fully Alive 5.1 as a further examination of the individual role within a community.

Instruction

Time to Teach 5 minutes

- As a whole group teacher reads the scripture reference written on the board (Psalm 24) and refers to the mind map from the previous lesson – it is the responsibility of the students to protect God’s creations.
- Students are directed to stay within the school boundaries outside and investigate a specific area (5m²) including the area above, making specific observations on paper.

Understanding Life Systems Strand
Grade 7

Time to Practice 25 minutes

- In pairs students sketch any living and non-living things they observe in their area and record any interactions occurring.

Time to Share 10 minutes

- Students present their sketches and observations using the chart paper to the whole class.
- Teacher gives feedback to students in regards to what they did (or failed to do) to protect the environment during their investigation.

Understanding Life Systems Strand Grade 7

“By the word of the Lord the heavens were made, and all their host by the breath of his mouth. He gathered the waters of the sea as in a bottle; he put the deeps in storehouses. Let all the earth fear the Lord; let all the inhabitants of the world stand in awe of him. For he spoke, and it came to be; he commanded, and it stood firm.” (Psalm 33: 6-9)

Lesson 2.2 Ecosystems

Purpose

Students will learn what an ecosystem is, how to create one, and how to properly care for one.

Essential Understandings

Catholic Curriculum Map Links:

- Develop an understanding of the role of the individual within the community (1.2, 1.3, 10.2, 10.3 BIM, 5.1 FA)

Science and Technology:

- Design and construct a model ecosystem, and use it to investigate interactions between the biotic and abiotic components in an ecosystem? (SE2.2)

Assessment for Learning

Use checklist for observing students during experimentation process.

Teacher feedback provided during whole class correction of the classification chart.

Rubric for collection of observation charts at the end of the unit.

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, blackboard, chalk, class set of BLM 2.2A, 2.2B, 2.2C, overhead projector, overhead of BLM 2.2C

The students need: aluminum foil, apron, coffee grounds, container to hold water, duct tape, lettuce, magnifying glass, metal tab from pop can, newspaper, orange peel, plastic bag, plastic bottle cap, rubber gloves, shoebox, soil, spoon, water, worms

Teachers may need to supply the items if students do not have them – let them know about this ahead of time and have them bring in the items gradually. This can also be done as a class ecosystem rather than an individual one if space does not permit.

Refer to Believe in Me 1.2, 1.3, 10.2, 10.3 and Fully Alive 5.1 for a further examination of the individual role within a community.

Instruction

Time to Teach 5 minutes

- As a whole group teacher reads the scripture reference written on the board (Psalm 33) and have students discussion implications (i.e.: God created everything, all creation follows God’s will, we should honor God)
- Teacher uses observations of the students from the day before as a model of how to properly care for ecosystems and creates a class note.
- Teacher introduces experiment for individuals (creating their own ecosystem).

Time to Practice 25 minutes

- Students are given time to follow the procedure given and create their ecosystem.

Understanding Life Systems Strand

Grade 7

Time to Share 10 minutes

- As a whole class, students are to discuss issues they encountered preparing the ecosystem.
- Teacher gives feedback of student behavior during experimentation process.
- As a whole class, students present their findings from BLM 1.3 and discuss why they believe answers are correct.
- Teacher uses overhead to identify correct answers.
- Teacher refers back to initial scripture passage of how God directly or indirectly made all items used in experiment – God either directly created the item (coffee grounds, lettuce, orange peel, worms) or indirectly through the inventions by humans (aluminum foil, metal tab from pop can, newspaper, plastic bottle cap) who were also created by God

**Understanding Life Systems Strand
Grade 7**

BLM 2.2A

Creating a Class Ecosystem

Student Name: _____

Materials:

The students need: aluminum foil, apron, coffee grounds, container to hold water, duct tape, lettuce, magnifying glass, metal tab from pop can, newspaper, orange peel, plastic bag, plastic bottle cap, rubber gloves, shoebox, soil, spoon, water, worms

Procedure:

- 1) Separate and classify all materials as either biotic or abiotic in the chart supplied (BLM 1.3).
- 2) Line a shoebox with a plastic bag. Use duct tape to secure the plastic bag to the box.
- 3) Add soil until the box is half full. Add water to make the soil moist.
- 4) Arrange the testing items in the soil: aluminum foil, coffee grounds, lettuce, metal tab from pop can, newspaper, orange peel, plastic bottle cap, worms and cover each with a layer or soil.
- 5) Place the box in a sunny place and keep the soil moist by watering daily.
- 6) At the start of each class, students are to use rubber gloves and move the top layer of soil.
- 7) Use the magnifying glass to observe the items. Sketch each. Observe any interactions that are occurring. Record observations in the chart supplied (BLM 1.4). Also note any unexpected results.
- 8) Experiment will continue to the end of this unit.

**Understanding Life Systems Strand
Grade 7**

BLM 2.2B

Chart for Classifying Items in Experiment

Student Name: _____

Place a checkmark under the correct category for each item.

Item	Biotic	Abiotic	Not Sure
Aluminum foil			
Apron			
Coffee grounds			
Container to hold water			
Duct tape			
Lettuce			
Magnifying glass			
Metal tab from pop can			
Newspaper			
Orange peel			
Plastic bag			
Plastic bottle cap			
Rubber gloves			
Shoebox			
Soil			
Water			
Worms			

**Understanding Life Systems Strand
Grade 7**

BLM 2.2C

Chart for Observing Items

Student Name: _____

Item	Sketches/Interactions Occurring				
	Day 1	Day 2	Day 3	Day 4	Day 5
Aluminum foil					
Coffee grounds					
Lettuce					
Metal tab from pop can					
Newspaper					
Orange peel					
Plastic bottle cap					
Worms					
Unexpected results					

Understanding Life Systems Strand Grade 7

Subtask 3: Our Damaged World

“Then God said, "Let us make humankind in our image, according to our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the wild animals of the earth, and over every creeping thing that creeps upon the earth. So God created humankind in his image, in the image of God he created them; male and female he created them.” (Genesis 1: 26-27)

Description

Students will learn how humans have both damaged and protected the Earth, as well as their individual responsibilities.

Lesson 3.1 Our Damaged World

Purpose

Students will learn how humans have damaged the Earth.

Essential Understandings

Catholic Curriculum Map Links:

- Develop an awareness of the Creation Stories (4.2 BIM)
- Identify responsibilities they have for themselves and others (8.2, 8.3 BIM, 4.2 FA)

Science and Technology:

- Assess the impact of selected technologies on the environment (SE1.1)
- Describe ways in which human activities and technologies alter balances and interactions in the environment (SE3.8)

Language:

- Create a variety of media texts for different purposes and audiences, using appropriate forms, conventions, and technique (ML OE3)

Assessment for Learning

Use BLM 3.1 Rating scale for collage, rating scale of student reflection for their selected image and explanation.

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, Believe in Me textbook, assorted magazines, newspapers, scissors, glue, blank paper, pencil crayons, markers, overhead of BLM 3.1

Refer to Believe in Me 8.2, 8.3 and Fully Alive 4.2 for a further examination of responsibilities the students have for themselves and others.

Understanding Life Systems Strand Grade 7

Instruction

Time to Teach 10 minutes

- As a whole class activity, teacher does read aloud of Creation story excerpt.
- Individually students to brainstorm the word “dominion” and the phrase “in the image of God he created them.”
- As a whole class, teacher highlights that humans were given control of the Earth, but also to act as God does – loving, just, and equitable to *all* creatures.
- Teacher will use BLM 3.1 to review the components of a collage, and what it should contain

Time to Practice 25 minutes

- In pairs, students are to read “The World that God Made” (p.74 Believe in Me).
- In pairs, students are to discuss how humans destroy the environment using both the story and contemporary examples (magazines, newspapers, own ideas).
- Independently, students are to create a collage using both images from newspapers/magazines, sketched images and/or relevant terms to display human’s destroying the environment (they should refer to BLM 3.1 to ensure the expectations are being met)

Time to Share 5 minutes

- Teacher is to have students relate their images back to the original excerpt and the terms “dominion” and “in the image of God he created them.” Teacher should highlight that humans exert “dominion” over the earth but often forget it is not always “in the image of God.”
- Students are to choose their best individual image and show it to the class, explaining how humans are showing dominion, but fail to do it in the image of God.

Integrating Science and Technology and Catholic Curriculum Maps
Understanding Life Systems Strand
Grade 7

BLM 3.1

Rating Scale for Collage

Student Name: _____

A collage is a visual representation of ideas, emotions and understanding in response to a specific topic, concept, situation or issue. Although a collage may include some words, it is usually composed of a variety of visual materials such as photographs, magazine pictures and scraps of cloth and paper.

1 = rarely 2 = occasionally 3 = often 4 = constantly

- | | | | | |
|--|---|---|---|---|
| 1) The topic, theme or message of the collage is clear. | 1 | 2 | 3 | 4 |
| 2) The selected visuals and material enhance understanding of the topic, theme, or message. | 1 | 2 | 3 | 4 |
| 3) The visuals are arranged to direct the viewer's eye in a way that matches the student's intent. | 1 | 2 | 3 | 4 |
| 4) The style of collage is appropriate for the topic, theme or message. | 1 | 2 | 3 | 4 |
| 5) The collage includes adequate detail. | 1 | 2 | 3 | 4 |
| 6) The collage demonstrates overall organization and planning. | 1 | 2 | 3 | 4 |
| 7) The images are presented with care. | 1 | 2 | 3 | 4 |

Reflective Reasoning: If I were to revise my collage in any way, the next time I would -

Understanding Life Systems Strand Grade 7

“For everything there is a season, and a time for every matter under heaven: a time to be born, and a time to die; a time to plant, and a time to pluck up what is planted; a time to kill, and a time to heal; a time to break down, and a time to build up; a time to weep, and a time to laugh; a time to mourn, and a time to dance; a time to throw away stones, and a time to gather stones together; a time to embrace, and a time to refrain from embracing; a time to seek, and a time to lose; a time to keep, and a time to throw away; a time to tear, and a time to sew; a time to keep silence, and a time to speak; a time to love, and a time to hate; a time for war, and a time for peace.”
(Ecclesiastes 3: 1-8)

Lesson 3.2 Protecting Our World

Purpose

Students will use the decision making model to examine how human actions failed to protect the environment, and offer alternatives to remedy the situation.

Essential Understandings

Catholic Curriculum Map Links:

- Examine and apply responsible decision making (3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 BIM, 4.1 FA)
- Identify responsibilities they have for themselves and others (8.2, 8.3 BIM, 4.2 FA)

Science and Technology:

- Assess the impact of selected technologies on the environment (SE1.1)
- Describe ways in which human activities and technologies alter balances and interactions in the environment (SE3.8)

Assessment for Learning

Directly observe student participation in class discussion about scripture passage.

Teacher feedback provided in response to student comments.

Checklist of student engagement during Graffiti activity

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, class set of copies of scripture passage from Ecclesiastes, class set of copies of Decision making model (p.59 Believe in Me), 5 short articles about an environment disaster, chart paper, different coloured markers

Students need to be familiar with the Graffiti Strategy (Think Literacy: Cross Curricular Approaches, Grades 7-12) in order to complete the “time to practice” piece. The initial rotation should be longer than the other 4 rotations as they are using the decision making process for the first time. The next 4 rotations are commenting on the decisions of others.

Refer to Believe in Me units 3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 and Fully Alive unit 4.2 for a further examination of responsible decision making.

Refer to Believe in Me units 8.2, 8.3 and Fully Alive unit 4.2 for a further examination of responsibilities students have for themselves and others (8.2, 8.3 BIM, 4.2 FA)

Understanding Life Systems Strand

Grade 7

Instruction

Time to Teach 10 minutes

- Independently, students read the scripture passage from Ecclesiastes and relate this to the collage from last class.
- As a whole class, students volunteer ideas of what meaning of the passage.
- Teacher introduces the concept of a decision making process using the model from Believe in Me (p.59).
- Teacher will offer a brief scenario so the students have an opportunity to use the decision making process (i.e.: City employees find old car batteries in the local river, and dead fish floating on the water's surface – what should be done?)

Time to Practice 25 minutes

- In small groups (5 people) students are to use the Graffiti strategy to read and respond to 5 different articles about environmental disasters using the decision making process.
- Groups will rotate between the 5 articles, making comments/suggestions on the decision making process of others.

Time to Share 5 minutes

- Teacher ensures students that the students will present their article next class.
- As a whole class, teacher asks the students to comment about the decision making process.
- Teacher makes reference to the initial scripture quotation - some decisions are not easy to make (i.e.: Should drivers be forced to sell their old “gas guzzler” cars for more fuel efficient models in order to protect the environment, even though it would cost more money?)

Understanding Life Systems Strand Grade 7

“Thy will be done, on earth as it is in heaven...forgive us our trespasses as we forgive those who trespass against us, and lead us not into temptation, but deliver us from evil” (Matthew 6: 10, 14)

Lesson 3.3 Protecting our World - Continued

Purpose

Students will use the decision making process to communicate how they can create positive changes in damaged ecosystems.

Essential Understandings

Catholic Curriculum Map Links:

- Identify the significance of the Lord’s prayer (6.3 BIM)
- Examine and apply responsible decision making (3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 BIM, 4.1 FA)
- Identify responsibilities they have for themselves and others (8.2, 8.3 BIM, 4.2 FA)

Science and Technology:

- Assess the impact of selected technologies on the environment (SE1.1)
- Describe ways in which human activities and technologies alter balances and interactions in the environment (SE3.8)

Assessment for Learning

Teacher feedback provided in response to student comments.

Checklist of student engagement during Graffiti activity

Rating scale for reflection (BLM 1.1A)

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

This is a continuation of the previous lesson.

You need: previous chart paper from Graffiti activity, Bible, “We create change” article (p.134 Fully Alive), cause/effect chart

Refer to Believe in Me units 6.3 for a further examination of the significance of the Lord’s prayer.

Instruction

Time to Teach 5 minutes

- As a whole class teacher will highlight the scripture passage from Matthew as a way to live our lives – we should live as God does, we are human and make mistakes, we can be forgiven, but also must forgive others.
- As a whole class, teacher does a read aloud of the “We create change” article as inspiration for students when they are presenting their articles

Time to Practice 30 minutes

- In small groups from yesterday, students have 5 minutes to collect their ideas and discuss how they will present their article in order to involve all members.
- Each group presents their article using the chart paper as the decision making process as a basis

**Understanding Life Systems Strand
Grade 7**

Time to Share 5 minutes

- The teacher should refer to the Sacrament of Reconciliation at this point to remind students that those who caused the environment disasters are human and make mistakes, so we should not judge too harshly.
- The students are to write a reflection based on the following:
 1. How can we repair these broken relationships?
 2. What can we contribute to the “common good”?
 3. How can we reach out to those we think have done wrong?

Understanding Life Systems Strand Grade 7

"If one member suffers, all suffer together with it; if one member is honoured, all rejoice together with it." (1 Corinthians 12: 26)

Lesson 3.4 Cleaning Up Our World

Purpose

Students will analyze a specific human action, and determine the impacts on a local ecosystem.

Essential Understandings

Catholic Curriculum Map Links:

- Develop an understanding of the need for community and recognize the need for community (1.2, 1.3 BIM, 5.1 FA)
- Develop an understanding of the role of the individual within the community (1.2, 1.3, 10.2, 10.3 BIM, 5.1 FA)

Science and Technology:

- Analyze the costs and benefits of selected strategies for protecting the environment (SE1.1)
- Describe ways in which human activities and technologies alter balances and interactions in the environment (SE3.8)

Assessment for Learning

Direct observation of students while completing cause/effect chart

Checklist of students while involved in small group work

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, class set of BLM 3.4, markers, chart paper

Refer to Believe in Me units 1.2, 1.3 and Fully Alive unit 5.1 for a further examination of the need for and for community.

Refer to Believe in Me units 1.2, 1.3, 10.2, 10.3 and Fully Alive unit 5.1 for a further examination of role of the individual within the community.

Instruction

Time to Teach 10 minutes

- As a whole class, teacher will refer to scripture quotation and relate that everyone is affected by the actions of others, whether directly or indirectly.
- Teacher will inform students about the Butterfly Effect (idea that a butterfly's wings represent a small change in the initial condition of the system, which causes a chain of events leading to large-scale alterations of events. Had the butterfly not flapped its wings, the trajectory of the system might have been vastly different) and inform students that an oil spill has occurred on the school yard and the class is responsible for cleaning it up.
- Teacher should also remind students of the variety of gifts that everyone has, and the various ways that *all members* of the community could contribute

Understanding Life Systems Strand

Grade 7

Time to Practice 20 minutes

- Independently, students will be given a cause and effect chart to complete which will outline consequences to the local ecosystem.
- In small groups (5 people) students will come to a consensus of how to clean it up and suggest costs involved and record their results on chart paper

Time to Share 10 minutes

- In small groups, students will present their findings to the class, and well as possible solutions to clean it up.
- Teacher will finish by referring back to initial scripture passage and relate how the ecosystem is affected by the actions of others.
- Again, teacher should refer to the variety of gifts Gods give everyone, which can be used to solve problems such as these.

Integrating Science and Technology and Catholic Curriculum Maps
Understanding Life Systems Strand
Grade 7

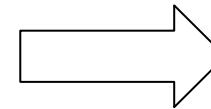
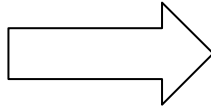
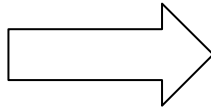
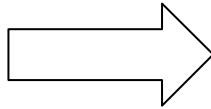
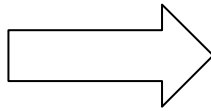
BLM 3.4 Cause/Effect Chart

Cleaning Up an Oil Spill at School

Student Name: _____

Actions that could be taken

Results of those actions
(Costs involved)



Understanding Life Systems Strand

Grade 7

Subtask 4: Where Do I Fit In?

“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.” (Wisdom 11: 24-26)

Description

Students will analyze a recent ecological disaster and debate who is responsible for cleaning it up.

Lesson 4.1 Where Do I Fit In?

Purpose

Students will analyze a recent ecological disaster and debate who is responsible for cleaning it up.

Essential Understandings

Catholic Curriculum Map Links:

Develop an understanding of the need for community and recognize the need for community.

- Develop an understanding of the role of the individual within the community (1.2, 1.3, 10.2, 10.3 BIM, 5.1 FA)
- Develop an understanding of the need for community and recognize the need for community (1.2, 1.3 BIM, 5.1 FA)

Science and Technology:

- Analyze the costs and benefits of selected strategies for protecting the environment (SE1.1)

Assessment for Learning

Use anecdotal observation of student participation during independent and large group session. Teachers will provide feedback, use checklist during debate, and anecdotal observation during brainstorming activity.

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, article about a recent ecological disaster, class set of BLM 4.1

Students participate in a Triangle Debate ([Think Literacy Cross-Curricular Approaches Grades 7-12](#), p. 186) during this lesson and need to know the procedure and protocol for this (respecting people, stay on topic). Additional time will be required if this is the initial time for the students using this format.

Refer to [Believe in Me](#) units 1.2, 1.3 and [Fully Alive](#) unit 5.1 for a further examination of the need for and for community.

Refer to [Believe in Me](#) units 1.2, 1.3, 10.2, 10.3 and [Fully Alive](#) unit 5.1 for a further examination of role of the individual within the community.

Understanding Life Systems Strand

Grade 7

Instruction

Time to Teach 10 minutes

- As a whole class, teacher will refer to the scripture passage and highlight that God loves all creations, including humans. Explain what it means to be loved by God, and to love like God. Make the connection to the value of ecosystems, and their need to be protected.
- Teacher will inform students they will be doing a Triangle Debate, and review the procedure and protocol.
- Teacher will be a read aloud the article on an ecological disaster.

Time to Practice 20 minutes

- Independently, students need to choose a side either in favour or against the company for cleaning up the environment, making jot dot notes about key points brought up in the article that support your position.
- Teacher will divide the class into three groups (those in favour of the company cleanup, those against the company cleanup and those who will question the other groups). Students should recall the decision making process from lesson 3.2
- In large groups, students will have time to formulate and solidify their arguments.
- As a whole class, students will participate in the Triangle Debate. The teacher will summarize briefly how the process will work using a simple example. (i.e.: Topic: Recycling should be eliminated, one side for, one side against, one side prepares comments and questions about issue)

Time to Share 10 minutes

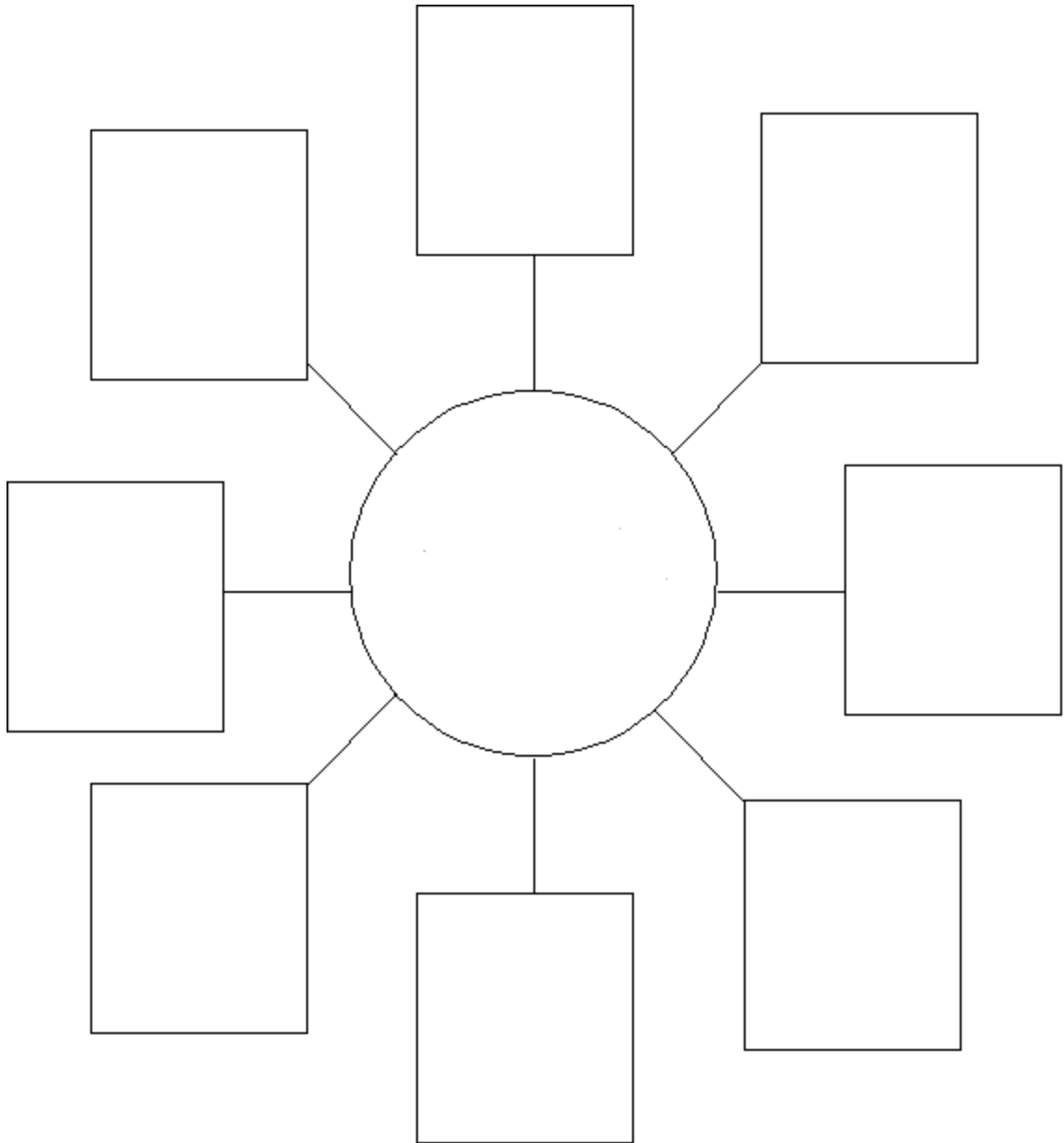
- As a whole class, teacher summarizes key points in debate and refers to initial scripture passage (God loves all things) and points out that humans are responsible for their actions.
- As a whole class, students brainstorm who else does/may clean up the environment (company responsible, government, volunteers, residents in area)
- Teacher assigns students to use BLM 4.1 to explain who should be responsible for cleaning up ecological disasters.

Integrating Science and Technology and Catholic Curriculum Maps
Understanding Life Systems Strand
Grade 7

BLM 4.1

Who should be responsible for cleaning up ecological disasters?

Student Name: _____



Understanding Life Systems Strand

Grade 7

Subtask 5: Producer, Consumer or Decomposer?

Then Jesus told this parable: "A man had a fig tree planted in his vineyard; and he came looking for fruit on it and found none. So he said to the gardener, "See here! For three years I have come looking for fruit on this fig tree, and still I find none. Cut it down! Why should it be wasting the soil? He replied, "Sir, let it alone for one more year, until I dig around it and put manure on it. If it bears fruit next year, well and good; but if not, you can cut it down." (Luke 13: 6-9)

Description

Students will distinguish between specific roles in an ecosystem. Students will examine how the ecosystems are affected when one element is removed. Students will learn how sustainability can ensure the ecosystems stay in harmony. Students will learn how ecosystems can change through succession.

Lesson 5.1 Producer, Consumer or Decomposer?

Purpose

Students will distinguish between specific roles in an ecosystem.

Essential Understandings

Catholic Curriculum Map Links:

- Develop an awareness of the Creation Stories (4.2 BIM)

Science and Technology:

- Describe the roles and interactions of producers, consumers, consumers, and decomposers within an ecosystem. (SE3.3)

Assessment for Learning

Use anecdotal observation of students during Jigsaw Activity and D.P.A. activity.

Written reflection of the roles of the elements in an ecosystem

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, textbook page/reference material on information about producers, consumers, and decomposers, blackboard, chalk, D.P.A. activity cards of biotic components that are producers, consumers and decomposers

Students participate in a Jigsaw Activity ([Think Literacy Cross-Curricular Approaches Grades 7-12](#), p. 170) during this lesson and need to know the procedure and protocol for this (respecting people, stay on topic). Additional time will be required if this is the initial time for the students using this format.

The teacher needs to ensure information written on the board is correct, and will copy down the information and distribute it the next class as a class note.

Refer to [Believe in Me](#) unit 4.2 for a further examination of the Creation Story.

Understanding Life Systems Strand

Grade 7

Instruction

Time to Teach 5 minutes

- As a whole class, teacher will read the scripture reference.
- Students will brainstorm how this relates to science, given the topic “producer, consumer, decomposer” (definitions covered in lesson 1.2).
- Teacher will relate how all parts of creation have a role to be a productive, and if not, they are eliminated

Time to Practice 30 minutes

- In 3 groups, students are to participate in a Jigsaw Activity, where each group makes summary notes of either a producer, consumer, or decomposer and then rotate to the other groups until all information has been gathered
- As a whole class, students write points on the blackboard which becomes their class note (teacher will copy this and distribute it the next day for the students)
- As a whole class, the teacher will distribute individual role cards to the students showing either a consumer, producer or decomposer
- Students will participate in a DPA Activity imitating the role card and its’ interaction in an ecosystem with other biotic elements

Time to Share 5 minutes

- Students will individually tell the class what their role card was
- Teacher will have students draw a picture of their role card from the activity which depicts:
 - a) the role in the ecosystem
 - b) the interactions it encounters
 - c) how it could be eliminated from an ecosystem

Understanding Life Systems Strand Grade 7

“Beloved, let us love one another, because love comes from God; everyone who loves is born of God and knows God. Whoever does not love does not know God, for God is love. God's love was revealed to us in this way: God sent his only Son into the world so that we might live through him. In this is love, not that we loved God, but that he loved us so much, we also ought to love one another. No one has ever seen God; if we love one another, God lives in us, and his love is perfected in us.” (1 John 4: 7-10)

Lesson 5.2 Our Connected World

Purpose

Students will examine how the ecosystems are affected when one element is removed.

Essential Understandings

Catholic Curriculum Map Links:

- Identify the need for balance in their lives (4.1 FA)

Science and Technology:

- Describe the transfer of energy in a food chain and explain the effects of any part of the chain. (SE3.4)
- Describe how matter is cycled within the environment and explain how it promotes sustainability. (SE3.5)

Assessment for Learning

Rating scale of presentation of role card

Feedback during food chain web

Rubric for food chain web (BLM 5.2)

Rating scale for reflection (BLM 1.1A)

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, student reflections from last lesson, blackboard, chalk, blank paper, pencil crayons, markers, BLM 5.2

Access to computers during this lesson would be advantageous to create the graphic organizer.

Students utilize the Webbing, Mapping and More strategy ([Think Literacy Cross-Curricular Approaches Grades 7-12](#), p. 108) in this lesson.

Refer to [Fully Alive](#) unit 4.1 for a further examination of the need for balance in life.

Instruction

Time to Teach 5 minutes

- As a whole class, teacher will read the scripture reference as reminder that all creatures have a purpose, including those that seem needless (i.e.: amoeba – they consume bacteria, mosquitoes – food for fish and birds, slugs – speed up decomposition and improve quality of the soil). This can also be compared to various human jobs that don't seem important or glamorous. (i.e.: garbage collectors may not seem very important, but things will become very smelly if their job is left undone.)
- Teacher prompts students to recall the roles of producers, consumers and decomposers

Understanding Life Systems Strand

Grade 7

Time to Practice 30 minutes

- As a whole class, students will individually present their reflection from their DPA role card from yesterday
- Teacher will prompt students to think of a typical breakfast and illustrate this a food chain on the board
- Students will individually create a web of a food chain for an environment (e.g. lake, forest) and indicate the producers, consumers, decomposers
- Students should write terms on the web first, get it checked with the teacher, then illustrate

Time to Share 5 minutes

- Students will individually tell the class the environment for their food web
- Teacher will have students write a reflection about what occurs if one element in the food chain is eliminated and make a connection to the human community and contributions to the common good – what happens if we physically, emotionally and/or socially remove certain members?

**Understanding Life Systems Strand
Grade 7**

BLM 5.2

Food Web Rubric

Student Name: _____

Category	Level 4	Level 3	Level 2	Level 1
Characters	All organisms are described and are appropriately sized for the food chain.	Most organisms are described and are appropriately sized for the food chain.	All organisms are described but are not appropriately sized for the food chain.	Organisms are neither described NOR appropriately sized for the food chain.
Neatness and Attractiveness	Exceptionally well designed, neat, and attractive. Colors that go well together are used to make the chart more readable.	Neat and relatively attractive.	Characters are neatly arranged or drawn but the chart appears quite plain.	Appears messy and "thrown together" in a hurry.
Accuracy of Plot	All organisms are positioned correctly and noted on the food chain. Direct connections and flow are easily seen.	All organisms are positioned correctly and noted on the food chain. Connections and flow of chart is easily readable.	All organisms are positioned correctly and noted on the food chain	No organisms are positioned correctly or noted for a food chain.
Title	Title is creative and clearly relates to the project being graphed and is printed at the top of the graph.	Title clearly relates to the project being graphed and is printed at the top of the graph.	A title is present at the top of the graph.	A title is not present.

Understanding Life Systems Strand Grade 7

“Jesus came up and spoke to them. He said, 'All authority in heaven and on earth has been given to me. Go, therefore, make disciples of all nations; baptize them in the name of the Father and of the Son and of the Holy Spirit, and teach them to observe all the commands I gave you. And look, I am with you always; yes, to the end of time.’” (Matthew 28: 18-20).

Lesson 5.3 Sustainability

Purpose

Students will learn how sustainability can ensure the ecosystems stay in harmony.

Essential Understandings

Catholic Curriculum Map Links:

- Examine and apply responsible decision making(3.2, 4.2, 4.3, 5.2, 6.1, 6.2 BIM,4.1 FA)

Science and Technology:

- Describe how matter is cycled within the environment and explain how it promotes sustainability. (SE3.5)
- Describe Aboriginal perspectives on sustainability and describe ways they can be used in habitat and wildlife management (SE3.9)

Language:

- Recognize a variety of text forms, text features, and stylistic elements and demonstrate understanding of how they communicate meaning (R OE2)

Assessment for Learning

Feedback of student answers, direct observation of students volunteering answers

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, blackboard, chalk, an Aboriginal story that embeds the principle of sustainability

Refer to Believe in Me units 3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 and Fully Alive unit 4.2 for a further examination of responsible decision making.

Instruction

Time to Teach 25 minutes

- As a whole class, teacher writes the initial scripture passage on the board, along with the word “sustainability.”
- As a whole class, students brainstorm the meaning. Consensus is found and the teacher writes the definition which the students copy.
- Teacher challenges the class how this relates to the scripture passage (Jesus is giving power to the apostles to baptize people, and the Catholic faith was able to continue).
- Students copy note that teacher makes on the board.
- As a whole class, teacher does a read aloud of an Aboriginal story

Understanding Life Systems Strand

Grade 7

Time to Practice 5 minutes

- Independently, students are to write down in point form actions of what was done in the story to promote sustainability within the environment

Time to Share 10 minutes

- As a whole class, students volunteer their answers of how sustainability was promoted in the story
- Teacher challenges the class with the following questions:

1) Why would God embed sustainability into creation? (Because everything God created was good and God wants it to continue)

2) What does it mean that we participate in the sustainability of an environment or a community?

(We believe the environment or community is also good and we want it to continue)

3) What responsibility do we have? (That we ensure we are following God's will in sustainability - love God with all our heart, mind and thought, and love our neighbor as ourselves)

- Teacher explains that next class they will be finding contemporary examples of sustainability

Understanding Life Systems Strand Grade 7

“I call you lead a life worthy of the calling to which you have been called, with all humility and gentleness, with patience, bearing with one another in love, making every effort to maintain the unity of the Spirit, just as you were called to the one hope of your calling, one Lord, one faith, one baptism, one God and Father of all, who is above all and through all and in all. Each of us was given grace according to the measure of Christ's gift. The gifts he gave were to prepare all God's people for the work of Christian service, in order to build up the body of Christ.”
(Ephesians 4: 1-7, 12)

Lesson 5.4 Sustainability - Continued

Purpose

Students will learn how sustainability can ensure the ecosystems stay in harmony.

Essential Understandings

Catholic Curriculum Map Links:

- Examine and apply responsible decision making (3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 BIM, 4.1 FA)

Science and Technology:

- Describe how matter is cycled within the environment and explain how it promotes sustainability. (SE3.5)
- Describe Aboriginal perspectives on sustainability and describe ways they can be used in habitat and wildlife management (SE3.9)

Assessment for Learning

Rating scale for concept map, feedback of student reflections

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

Environment Canada released “The Sustainability Report” in 2004 which outlines various initiatives to protect ecosystems throughout the world - this is a good starting point for information about the topic.

You need: Bible, blackboard, chalk, class set of article “The Sustainability Report – An Environment and Sustainability Chronology” by Environment Canada, BLM 5.4

Refer to Believe in Me units 3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 and Fully Alive unit 4.2 for a further examination of responsible decision making.

Instruction

Time to Teach 5 minutes

- Teacher to discuss the answers from the previous day - God created the world, believed it was good, and wants it to continue. As creatures of God, humans have that responsibility to ensure the world continues *as God created it*.
- Students to offer examples of how nature re-creates itself (flowers create seeds which spread and new flowers grow, animals reproduce).
- Teacher to model this on the board using a concept map.

Understanding Life Systems Strand

Grade 7

Time to Practice 30 minutes

- Students to read “An Environment and Sustainability Chronology” and determine events in the past century that have contributed to the existence of various ecosystems. Students will use BLM 5.4 to depict this.
- Students to chose one of the events and do additional research in order to determine what living elements where protected in the ecosystem

Time to Share 5 minutes

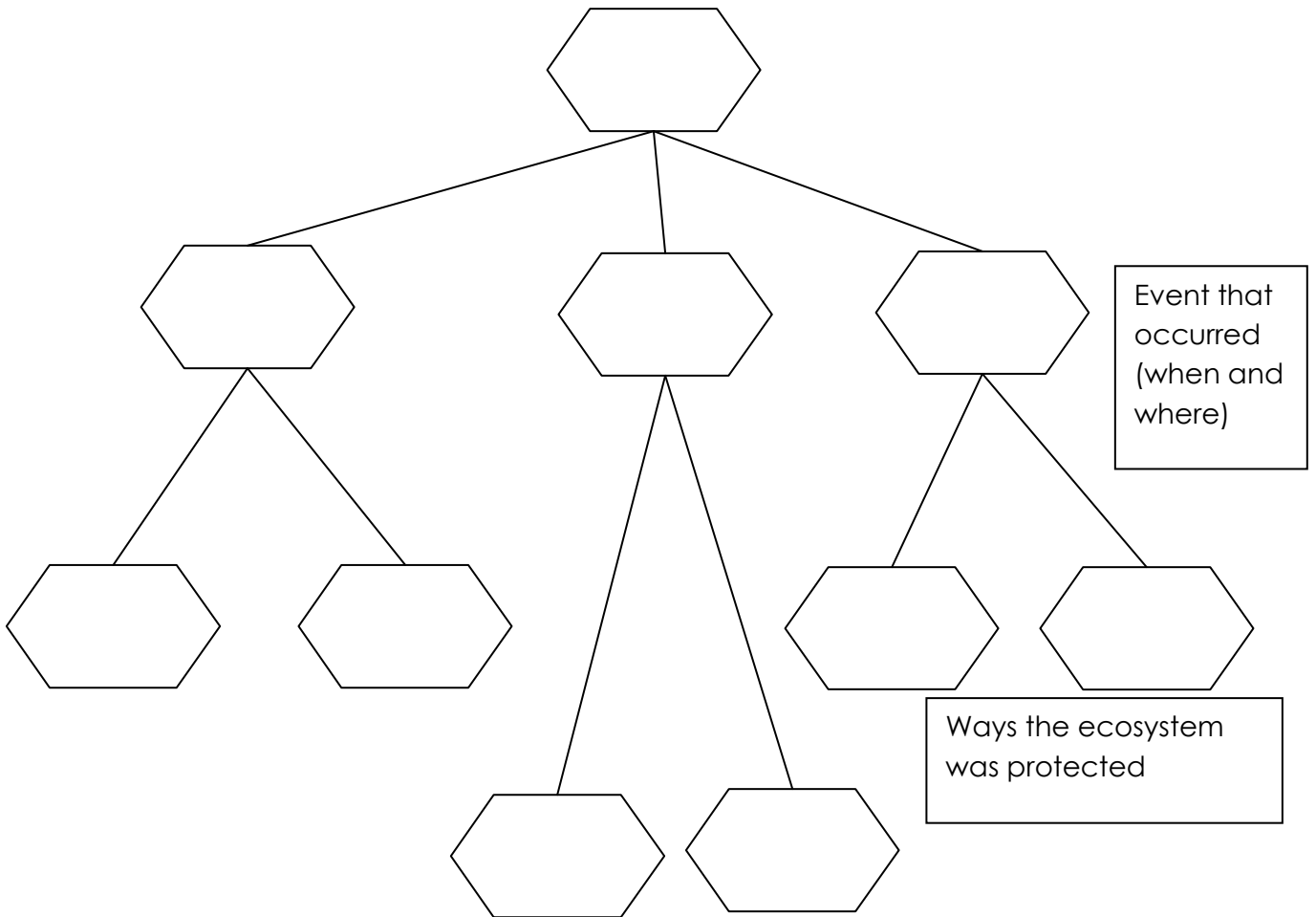
- Teacher will refer back to the initial scripture passage and have the students identify which gifts they used (or will use) in order to carry out the assignment

**Understanding Life Systems Strand
Grade 7**

BLM 5.4

Concept Map Showing Sustainability

Student Name: _____



Understanding Life Systems Strand Grade 7

“The fruit of the Spirit is love, joy, peace, patience, kindness, goodness, faithfulness, gentleness and self-control...since we live by the Spirit, let us keep in step with the Spirit.” (Galatians 5: 22-23, 25)

Lesson 5.5 Sustainability - Continued

Purpose

Students will learn how sustainability can ensure the ecosystems stay in harmony.

Essential Understandings

Catholic Curriculum Map Links:

- Examine and apply responsible decision making (3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 BIM, 4.1 FA)

Science and Technology:

- Describe how matter is cycled within the environment and explain how it promotes sustainability. (SE3.5)
- Describe Aboriginal perspectives on sustainability and describe ways they can be used in habitat and wildlife management (SE3.9)

Assessment for Learning

Rubric for poster (BLM 5.5)

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

Students complete research on topic chosen from previous day. Access to computers or the library would be beneficial.

Refer to Believe in Me units 3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 and Fully Alive unit 4.2 for a further examination of responsible decision making.

Instruction

Time to Teach 5 minutes

- Teacher writes the scripture passage on the board and the students brainstorm of how each of these traits can be shown in dealing with the environment and sustainability (especially kindness and self-control)
- Teacher will indicate the report will be done in the form of a poster showing the living elements protected in the ecosystem, with the threat shown in the background. The rubric will be shown to the students

Time to Practice 30 minutes

- Students to carry out further research on their topic from last class (living elements that were protected in the ecosystem) using the rubric as a guide

Time to Share 5 minutes

- Students will show their posters to the class and explain which of the fruits of the Holy Spirit was the most clearly evident in their work

**Understanding Life Systems Strand
Grade 7**

BLM 5.5

Poster Rubric

Student Name: _____

Category	Level 4	Level 3	Level 2	Level 1
Required Elements	The poster includes all required elements as well as additional information.	All required elements are included on the poster.	Some of the required elements are included on the poster.	Several required elements were missing.
Labels	All items of importance on the poster are clearly labeled with labels that can be read from across the classroom.	Almost all items of importance on the poster are clearly labeled with labels that can be read from across the classroom.	Many items of importance on the poster are clearly labeled with labels that can be read from across the classroom.	Labels are too small to view OR no important items were labeled.
Graphics - Relevance	All graphics are related to the topic and make it easier to understand. All borrowed graphics have a source citation.	All graphics are related to the topic and most make it easier to understand. Some borrowed graphics have a source citation.	All graphics relate to the topic. One or two borrowed graphics have a source citation.	Graphics do not relate to the topic OR several borrowed graphics do not have a source citation.
Attractiveness	The poster is exceptionally attractive in terms of design, layout, and neatness.	The poster is attractive in terms of design, layout and neatness.	The poster is acceptably attractive though it may be a bit messy.	The poster is distractingly messy or very poorly designed. It is not attractive.
Grammar	There are no grammatical/mechanical mistakes on the poster.	There are limited grammatical/mechanical mistakes on the poster.	There are some grammatical/mechanical mistakes on the poster.	There are several grammatical/mechanical mistakes on the poster.

Understanding Life Systems Strand

Grade 7

“For forty days the flood kept coming on the earth, and as the waters increased they lifted the ark high above the earth. The waters rose and increased greatly on the earth, and the ark floated on the surface of the water. They rose greatly on the earth, and all the high mountains under the entire heavens were covered. The waters rose and covered the mountains to a depth of more than twenty feet. Every living thing that moved on the earth perished—birds, livestock, wild animals, all the creatures that swarm over the earth, and all mankind. Everything on dry land that had the breath of life in its nostrils died. Every living thing on the face of the earth was wiped out; men and animals and the creatures that move along the ground and the birds of the air were wiped from the earth. Only Noah was left, and those with him in the ark.” (Genesis 7: 17-23)

Lesson 5.6 Our Changing World

Purpose

Students will learn how ecosystems can change through succession.

Essential Understandings

Catholic Curriculum Map Links:

- Examine and apply responsible decision making (3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 BIM, 4.1 FA)

Science and Technology:

- Distinguish between primary succession and secondary within a succession (SE3.6)
- Explain why an ecosystem is limited in the number of living things it can support (SE3.7)

Assessment for Learning

Feedback of student answers

Anecdotal observation of students volunteering answers

Teacher Notes

Add information to graffiti map from lesson 1.1 as it becomes relevant.

You need: Bible, blackboard, chalk, class set of BLM 5.6

Refer to Believe in Me units 3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 and Fully Alive unit 4.2 for a further examination of responsible decision making.

Instruction

Time to Teach 10 minutes

- Teacher will write the scripture passage on the board and have students offer suggestions why God wanted to destroy the earth (i.e.: people were sinning, a chance to start over).
- Teacher will explain that a flood is an example of secondary succession (the changing of an ecosystem over time)
- Teacher will write a note on the board of definitions for succession, primary succession, secondary succession

Understanding Life Systems Strand

Grade 7

Time to Practice 20 minutes

- Students will be given a chart (BLM5.6) with examples of various successions, and decide if they are primary or secondary.
- Teacher will take up the answers.
- As a whole class, students will use one example of an ecosystem and outline how it would change based on secondary succession (i.e.: how a forest changes after a fire has burnt it - After a fire, the first species to appear are those whose seeds are already present or those whose seeds spread quickly. As time passes, more slowly growing shrubs or trees crowd out the plants. Different species of plants, animals, and microbes will arrive as the vegetation changes. Fire allows a greater number of species to exist within a landscape.)

Time to Share 5 minutes

- Teacher should highlight that succession allows a greater number of species to exist in a landscape.
- Teacher to end with how God remade the earth after the flood - “Then God blessed Noah and his sons, saying to them, "Be fruitful and increase in number and fill the earth. The fear and dread of you will fall upon all the beasts of the earth and all the birds of the air, upon every creature that moves along the ground, and upon all the fish of the sea; they are given into your hands. Everything that lives and moves will be food for you. Just as I gave you the green plants, I now give you everything.” (Genesis 8: 1-3)

Understanding Life Systems Strand
Grade 7

BLM 5.6

Primary or Secondary Succession

Student Name: _____

Read the example and indicate if it is an example of primary succession (the formation of a new, unoccupied ecosystem) or secondary succession (a form of disturbance of an existing ecosystem)

	Example	Primary Succession	Secondary Succession
1)	Lava flow		
2)	Landslide		
3)	Forest fire		
4)	Logging		
5)	Open-pit mining		
6)	The area left from a retreating glacier		
7)	An abandoned strip mining operation		
8)	Tsunami		
9)	Flood		
10)	Hurricane		
11)	Harvesting crops		
12)	Windthrow/windsnap		

Understanding Life Systems Strand Grade 7

Subtask 6: Culminating Task

Description

As a culminating task students will create and share a pictorial representation (e.g. slideshow) of an ecosystem to answer the Unit Guiding Question - How do we act as stewards of creation in regards to our effect on ecosystems?

Lesson 6.1 Putting it All Together

Purpose

Students will create and share a pictorial representation (e.g. slideshow) of an ecosystem to answer the Unit Guiding Question - How do we act as stewards of creation in regards to our effect on ecosystems?

Essential Understandings

Catholic Curriculum Map Links:

- Examine and apply responsible decision making (3.2, 3.3, 4.2, 4.3, 5.2, 6.1, 6.2 BIM, 4.1 FA)
- Identify responsibilities they have for themselves and others (8.2, 8.3 BIM, 4.2 FA)
- Develop an understanding of the need for community and recognize the need for community (1.2, 1.3 BIM, 5.1 FA)

Science and Technology:

- Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts (OE1)
- Investigate interactions within the environment, and identify factors that affect the balance between components of an ecosystem (OE 2)
- Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment (OE3)

Language:

- Create a variety of media texts for different purposes and audiences, using appropriate forms, conventions and techniques (OC OE3)

Assessment of Learning

Rubric for culminating task

Teacher Notes

Students are introduced to the culminating task – multiple days are needed for research, and creation of their pictorial. Access to computers/library would be beneficial.

A useful resource to determine which areas could be researched is available from the World Wildlife Federation, which has identified 825 separate terrestrial ecoregions throughout the world.

Class set of BLM 6.1A, B.

Understanding Life Systems Strand

Grade 7

Instruction

Time to Teach 10 minutes

- Teacher writes the following quotation on the board “science without religion is lame; religion without science is blind” by Albert Einstein
- As a whole class, students are to look at the graffiti chart from lesson 1.1 that has been added to on each lesson through the unit and brainstorm how science and religion have been connected throughout the unit
- Teacher gives students the outline for the culminating task and explains each required component including a review of the rubric and exemplar

Time to Practice 25 minutes

- The teacher will have a list of specific ecosystems that the students will randomly choose to research
- Students will research the biotic and abiotic elements in the ecosystem and interactions that exist in the ecosystem and record them using BLM 6.1A
- Students will create a food web for the biotic elements in the ecosystem using BLM 5.2
- Students will identify biotic elements in their food web that are at risk, and list ways they can protect them, and how they can maintain the harmony in the ecosystem using BLM 6.1B and the decision making process from lesson 3.2
- Students will research how human interferences have destroyed this harmony throughout the world and outline the process needed to restore this harmony from a scientific background (adding a new element, changing an existing element or increasing an existing element) using a charts similar to BLM 3.4, 4.1, 5.4 and 5.6
- Students will offer proposed actions to ensure this harmony is perpetually maintained from 4 point of views: 1) individual 2) local 3) national 4) global
- At all points, students need to make direct connections between their actions and how it is a reflection of being stewards of creation

Time to Share 5 minutes

- Students will present their pictorial representation of their ecosystem to the class

**Understanding Life Systems Strand
Grade 7**

BLM 6.1A

Abiotic/Biotic Elements in the Ecosystem

Student Name: _____

Abiotic Element	Biotic Elements

Understanding Life Systems Strand
Grade 7

Interactions in the Ecosystem

Description of Interactions Occurring	Biotic/Abiotic Elements Involved

Understanding Life Systems Strand

Grade 7

BLM 6.1B

Biotic Elements at Risk, and How to Protect Them

Student Name: _____

Biotic Element(s) at Risk	How to Protect Them
	1)
	2)
	3)
	1)
	2)
	3)
	1)
	2)
	3)
	1)
	2)
	3)
	1)
	2)
	3)
	1)
	2)
	3)

Integrating Science and Technology and Catholic Curriculum Maps

**Understanding Life Systems Strand
Grade 7**

Student Name: _____				
Categories	Level 1	Level 2	Level 3	Level 4
Knowledge and Understanding – Subject-specific content acquired in each grade (knowledge), and the comprehension of its meaning and significance (understanding)				
Knowledge of terminology specific to the unit of ecosystems	The student: <ul style="list-style-type: none"> demonstrates limited knowledge of the terminology specific to the study of ecosystems 	The student: <ul style="list-style-type: none"> demonstrates some knowledge of the terminology specific to the study of ecosystems 	The student: <ul style="list-style-type: none"> demonstrates considerable knowledge of the terminology specific to the study of ecosystems 	The student: <ul style="list-style-type: none"> demonstrates comprehensive knowledge of the terminology specific to the study of ecosystems
Understanding of the biotic and abiotic elements in an ecosystem and the interactions that occur between and among them	The student: <ul style="list-style-type: none"> demonstrates limited understanding of the biotic and abiotic elements in an ecosystem and the interactions that occur between and among them 	The student: <ul style="list-style-type: none"> demonstrates some understanding the biotic and abiotic elements in an ecosystem and the interactions that occur between and among them 	The student: <ul style="list-style-type: none"> demonstrates considerable understanding the biotic and abiotic elements in an ecosystem and the interactions that occur between and among them 	The student: <ul style="list-style-type: none"> demonstrates thorough understanding the biotic and abiotic elements in an ecosystem and the interactions that occur between and among them
Understanding of the impact of humans on ecosystems	The student: <ul style="list-style-type: none"> demonstrates limited understanding of the impact of humans on ecosystems 	The student: <ul style="list-style-type: none"> demonstrates some understanding of the impact of humans on ecosystems 	The student: <ul style="list-style-type: none"> demonstrates considerable understanding of the impact of humans on ecosystems 	The student: <ul style="list-style-type: none"> demonstrates thorough understanding of the impact of humans on ecosystems
Thinking and Investigation - – The use of critical thinking skills and inquiry and problem-solving skills and/or processes				
Use of initiating and planning skills and strategies to identify how their actions reflect being stewards of creation in dealing with the ecosystem	The student: <ul style="list-style-type: none"> uses of initiating and planning skills and strategies to identify how their actions reflect being stewards of creation in dealing with the ecosystem with limited effectiveness 	The student: <ul style="list-style-type: none"> uses of initiating and planning skills and strategies to identify how their actions reflect being stewards of creation in dealing with the ecosystem with some effectiveness 	The student: <ul style="list-style-type: none"> uses of initiating and planning skills and strategies to identify how their actions reflect being stewards of creation in dealing with the ecosystem with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses of initiating and planning skills and strategies to identify how their actions reflect being stewards of creation in dealing with the ecosystem with a high degree of effectiveness

Integrating Science and Technology and Catholic Curriculum Maps

Understanding Life Systems Strand
Grade 7

Use of processing skills and strategies to identify and explain how to protect the biotic elements at risk in an ecosystem	The student: <ul style="list-style-type: none"> uses processing skills and strategies to identify and explain how to protect the biotic elements at risk in an ecosystem with limited effectiveness 	The student: <ul style="list-style-type: none"> uses processing skills and strategies to identify and explain how to protect the biotic elements at risk in an ecosystem with some effectiveness 	The student: <ul style="list-style-type: none"> uses processing skills and strategies to identify and explain how to protect the biotic elements at risk in an ecosystem with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses processing skills and strategies to identify and explain how to protect the biotic elements at risk in an ecosystem with a high degree of effectiveness
Use of critical/creative thinking processes, skills and strategies to make connections between the issue and being stewards of creation	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to make connections between the issue and being stewards of creation with limited effectiveness 	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to make connections between the issue and being stewards of creation with some effectiveness 	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to make connections between the issue and being stewards of creation with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to make connections between the issue and being stewards of creation with a high degree of effectiveness
Communication - The conveying of meaning through various forms				
Expression and organization of ideas and information in a pictorial presentation format	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information in a pictorial representation with limited effectiveness 	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information in a pictorial representation with some effectiveness 	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information in a pictorial representation with considerable effectiveness 	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information in a pictorial representation with a high degree of effectiveness
Communication in form of a pictorial representation	The student: <ul style="list-style-type: none"> communicates his/her knowledge of the issue in a pictorial representation with limited effectiveness 	The student: <ul style="list-style-type: none"> communicates his/her knowledge of the issue in a pictorial representation with some effectiveness 	The student: <ul style="list-style-type: none"> communicates his/her knowledge of the issue in a pictorial representation with considerable effectiveness 	The student: <ul style="list-style-type: none"> communicates his/her knowledge of the issue in a pictorial representation with a high degree of effectiveness
Use of conventions for a pictorial representation (concise message, pictures exemplify text, pleasing use of colours, timed well, creative) vocabulary, terminology of unit	The student: <ul style="list-style-type: none"> uses conventions for a pictorial representation (concise message, pictures exemplify text, pleasing use of colours, timed well, creative), vocabulary, and terminology of the unit with limited effectiveness 	The student: <ul style="list-style-type: none"> uses conventions for a pictorial representation (concise message, pictures exemplify text, pleasing use of colours, timed well, creative), vocabulary, and terminology of the unit with some effectiveness 	The student: <ul style="list-style-type: none"> uses conventions for a pictorial representation (concise message, pictures exemplify text, pleasing use of colours, timed well, creative), vocabulary, and terminology of the unit with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses conventions for a pictorial representation (concise message, pictures exemplify text, pleasing use of colours, timed well, creative), vocabulary, and terminology of the unit with a high degree of effectiveness

Integrating Science and Technology and Catholic Curriculum Maps

Understanding Life Systems Strand
Grade 7

Application - The use of knowledge and skills to make connections within and between various contexts				
Transfer of knowledge of ecosystems to being stewards of creation	The student: <ul style="list-style-type: none"> transfers knowledge of ecosystems to being stewards of creation with limited effectiveness 	The student: <ul style="list-style-type: none"> transfers knowledge of ecosystems to being stewards of creation with some effectiveness 	The student: <ul style="list-style-type: none"> transfers knowledge of ecosystems to being stewards of creation with considerable effectiveness 	The student: <ul style="list-style-type: none"> transfers knowledge of ecosystems to being stewards of creation with a high degree of effectiveness
Making connections between science, technology, society, and the environment through the understanding of the effects of human influence on ecosystems	The student: <ul style="list-style-type: none"> makes connections between science, and technology, society and the environment through the understanding of the effects of human influence on ecosystems with limited effectiveness 	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of the effects of human influence on ecosystems with some effectiveness 	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of the effects of human influence on ecosystems with considerable effectiveness 	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of the effects of human influence on ecosystems with a high degree of effectiveness
Proposing courses of practical action to deal with problems relating to the issue	The student: <ul style="list-style-type: none"> proposes courses of practical action relating to the issue with limited effectiveness 	The student: <ul style="list-style-type: none"> proposes courses of practical action relating to the issue with some effectiveness 	The student: <ul style="list-style-type: none"> proposes courses of practical action relating to the issue with considerable effectiveness 	The student: <ul style="list-style-type: none"> proposes courses of practical action relating to the issue with a high degree of effectiveness