

*Integrating Science and Technology
and
Catholic Curriculum Maps*

Grade 4

Understanding Life Systems Strand

Habitats and Communities



**Catholic Curriculum Corporation
Central and Western Region**

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Understanding Life Systems Strand Grade 4

Unit At-A-Glance

<p>Catholic Social Teaching: Essential Question: OCSGE:</p>	<p>Preferential Option for the Poor and Vulnerable What does Jesus ask of us? The graduate speaks the language of life "recognizing that life is an unearned gift and that a person entrusted with life does not own it but that one is called to protect and cherish it." (1e) An effective communicator who listens actively and critically to understand and learn in light of gospel values. (2a) A collaborative contributor who respects the rights, responsibilities and contributions of self and others. (5e) A responsible citizen who respects the environment and uses resources wisely. (7i)</p>
<p>Topic:</p>	<p>Habitats and Communities This strand focuses on habitats, the natural communities that depend on them, and the impacts that changes to habitats can have on interrelationships among plants and animals within these communities.</p>
<p>Unit Guiding Question:</p>	<p>How does development affect natural habitats in your community and how can we answer God’s call to care for and build up creation?</p>
<p>Unit Culminating Task: Participate in a mock town hall meeting to answer the Unit Guiding Question, presenting arguments for and against urban development and the accompanying habitat loss. Preparation for the meeting will include:</p> <ul style="list-style-type: none"> • Identifying the advantages and disadvantages of a proposed urban development and the accompanying habitat loss, considering different perspectives, including the viewpoint that God created the world and we are called to care for creation • Researching potential concerns of the local housing developers, families in need of housing, environmentalists, municipal officials, citizens and local business owners • Present their arguments for or against development in a mock town hall meeting. 	
<p>Essential Understandings</p>	
<p>Catholic Curriculum Map: <i>Essential Question(s) & 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 I use the gift of my life?</p> <ul style="list-style-type: none"> • Identify ways that they take responsibility to be a responsible citizen at school and in the world. <p>How do I care for and build up God’s gifts of creation?</p> <ul style="list-style-type: none"> • Demonstrate a caring attitude toward the gifts of creation and building the “Kingdom” (recycling, watering plants, taking part in social justice projects). <p>Sustainability and Stewardship Systems and Interactions</p> <ul style="list-style-type: none"> • Plants and animals are interdependent and are adapted to meet their needs. (OE 1,2,3) • Changes to habitats can affect plant and animals and the relationships between them. (OE 2,3) • Society relies on plants and animals. (OE 1,2)

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<p>Science and Technology: <i>Scientific Inquiry Skill</i></p> <p>Science and Technology: <i>Expectation Tags, Guiding Questions & Specific Expectations</i></p>	<p>Research</p> <p>Relating Science and Technology to Society and the Environment</p> <ul style="list-style-type: none">• How are developments affecting natural habitats in your community, and what is being done to protect them? (SE 1.1)• What causes plant or animal species to become depleted or extinct, and how can we prevent this from happening? (SE 1.2) <p>Developing Investigation and Communication Skills</p> <ul style="list-style-type: none">• What do food chains look like for different plants and animals, including humans? (SE 2.2)• In what ways do plants and animals in a community depend on features of their habitat to meet important needs? (SE 2.3)• Do students use appropriate science and technology vocabulary in oral and written communication? (SE 2.5)• Do students use a variety of forms to communicate with different audiences and for a variety of purposes? (SE 2.6) <p>Understanding Basic Concepts</p> <ul style="list-style-type: none">• What is a habitat? (SE 3.1)• What are the systems within a habitat that help maintain its balance? (SE 3.2)• What factors affect the ability of plants and animals to survive in a specific habitat? (SE 3.3)• How are habitats like a community? (SE 3.4)• Where do producers, consumers and decomposers belong in a food chain? (SE 3.5)• What animals are carnivores, herbivores and omnivores? (SE 3.6)• How are humans dependent on natural habitats and communities? (SE 3.10)
<p>Language Expectations:</p>	<p>Writing</p> <ul style="list-style-type: none">• Identify their point of view and other possible points of view on the topic, and determine whether their information sufficiently supports their own view(SE 2.5)• Determine whether the ideas and information they have gathered are relevant and adequate for the purpose, and do more research if necessary(SE 1.6) <p>Oral</p> <ul style="list-style-type: none">• Demonstrate an understanding of appropriate speaking behavior in a variety of situations, including paired sharing and small- and large-group discussions(SE 1.2)• Communicate in a clear, coherent manner, presenting ideas, opinions, and information in a readily understandable form(SE 2.3)

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Unit Overview				
NOTE: Teachers will want to adjust the suggestions to address the learning needs of their students.				
Subtask	Lesson / Time	Essential Understandings	Assessment	Resources
1	Introduction of the Unit (40 minutes)	How do I use the gift of my life? OE3: Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them OE2: Investigate the interdependence of plants and animals within specific habitats and communities SE: 3.1, 2.5, 2.6	Observation	Creation Story (Bible or picture book) Chart paper Markers
2	Needing Each Other 2.1 What is a habitat? (40 minutes) 2.2 Carnivore, herbivore, omnivore (40 minutes) 2.3 Food chain (40 minutes) 2.4 Food chain game (40 minutes) 2.5 Interactions in a habitat (40 minutes)	God wills the interdependence of living things OE3: Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them OE2: Investigate the interdependence of plants and animals within specific habitats and communities SE: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 2.2, 2.3, 2.5, 2.6	Observation One Checklist (to be created and used for lessons 2.1, 2.2, 2.3, 2.5)	Creation Story (Bible or picture book) Habitat resources (posters, non-fiction texts, other informational sources) Various graphic organizers Index cards for Food Chain Game Exit slips
3	Human Impact 3.1 Human dependence (50 minutes) 3.2 Depletion/Extinction (40 minutes) 3.3 Human Interactions (40 minutes)	How do I use and take care of God's creation? OE1: Analyze the effects of human activities on habitats and communities OE2: Investigate the interdependence of plants and animals within specific habitats and communities SE: 1.1, 1.2, 2.3, 2.5, 2.6	Observation Rating Scale	Food Chain Game cards created in Subtask 2 Graphic organizers Exit slips Chart paper Markers Resources to teach point of view

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4	<p>Culminating Performance Task</p> <p>4.1 Advantages /disadvantages (40 minutes)</p> <p>4.2 Points of view (40 minutes)</p> <p>4.3 Planning for debate (40 minutes)</p> <p>4.4 Town hall Debate (40 minutes)</p>	<p>God calls us to care for and build up the gift of creation.</p> <p>OE1: Analyze the effects of human activities on habitats and communities</p> <p>OE2: Investigate the interdependence of plants and animals within specific habitats and communities</p> <p>OE3: Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them</p>	<p>Observation</p> <p>Student checklist (self-assessment)</p> <p>Rubric</p>	<p>Outline of culminating task</p> <p>Rubric</p> <p>Student checklist/contract</p> <p>Graphic organizer</p>
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Subtask 1: Overview of the Unit

Description

In this lesson, the teacher will use the *Creation Story* to introduce the unit. The introduction will also include the Unit Guiding Question, Essential Understandings and an introduction of the Unit Culminating Task. The students will participate in discussions to share their prior knowledge of content related to Habitats and Communities.

Lesson 1.1 Introduction to the Unit

Purpose

Students will brainstorm about plants, animals and habitats to show their prior knowledge of habitats and communities. They will also be introduced to the Unit Guiding Question, Essential Understandings and the culminating task.

Essential Understandings

Catholic Curriculum Map Links:

- How do I use the gift of my life?

Science and Technology:

- Demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (SE 3.1)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and for a variety of purposes (SE 2.6)

Assessment for Learning

Use observation to identify students' prior knowledge related to the questions for each group.

Use assessment information to identify the need for necessary review of the information directed by the questions.

Provide feedback to the students as you circulate to each group. Ask questions to help groups retrieve information learned in grade 2(animals) and 3(plants) of the life systems strand.

Teacher Notes

This lesson includes diagnostic assessment through observation.

When choosing a *Creation Story* to share with your class, make sure it includes how God made the world in seven days as well as our call to care for and use creation.

You may choose to set up your chart paper for each group in the form of a web, including the topic/question each group will focus on. The number of branches on the web should not be predetermined by you. The students should be encouraged to include as many branches as possible.

When creating a class definition for "habitat" see S&T glossary page 158. This definition should be posted in the classroom for reference throughout the unit.

The prayer at the end of this lesson should include the understandings from the students' webs. Each group could thank God for something within the question they were responsible for. It is important to tie in the responsibility of each of us to use our gifts to take care of our environment. This prayer could be used throughout the unit to help remind the students of their call to use their gifts to care for and build the "Kingdom". Put the prayer on chart paper once it has been created and post it in your classroom so that it can be used with other lessons in this unit.

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Instruction

Time to Teach (15 minutes)

- Introduce the unit, describe the focus of the unit (unit guiding question and essential understandings) and inform the students of the goals of the culminating performance task
- Read an age appropriate version of the *Creation Story* from a Bible or picture book.
- Ask: “What does God want us to do in this story?” (take care of the environment)
- Teacher asks, “How can you use the gift of your life to take responsibility in the care for the environment?”
- Record ideas on chart paper. Model a web (or other organizer) your class will use for their small group activity
- Teacher gives each small group one of the following questions to answer:
 - What do you know about plants?
 - What do you know about animals?
 - What do plants and animals need to survive?
 - What is a habitat?
 - Why do humans need plants and animals?
 - How do we use plants and animals in daily lives?

Time to Practice (15 minutes)

- Students brainstorm in small groups to share their responses to one of the questions
- Each group records their brainstorming session on chart paper

Time to Share (10 minutes)

- Each group presents their information to the rest of the class.
- Using the information in the webs, create a class definition for “habitat”.
- Create a class prayer thanking God for the gifts of creation and asking for guidance as we begin to understand our responsibility to take care of the environment.

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Subtask 2: Needing Each Other

Description:

The students will learn that God created all living things in a way that connects them in order to meet the necessities of life.

Lesson 2.1 What is a habitat?

Purpose

Students will explore one habitat to discover how God created the habitat to provide for the plants and animals living in them.

Essential Understandings

Catholic Curriculum Map Links:

- Demonstrate a caring attitude toward the gifts of creation

Science and Technology:

- Demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (SE 3.1)
- Identify factors that affect the ability of plants and animals to survive in a specific habitat (SE 3.3)
- Use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend on features of their habitat to meet important needs (SE 2.3)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and for a variety of purposes (SE 2.6)

Assessment for Learning

Use observation to assess each group's ability to find the information required in this lesson, to work on task, and use the graphic organizer.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

In this lesson your students will begin working in small groups to research one of the habitats you have collected resources for. The number of different habitats needed for your groupings is dependant upon your resources. Be sure to include habitats that are common in/around your community. This will be an important connection during the culminating task. A connection to the Grade 4 social studies topic Canada and World Connections: Canada's Provinces, Territories and Regions could be made by researching habitats located in the physical regions of Canada.

Each habitat should have at least 3 different resources that provide the necessary information for the research task. Include different sources of information such as posters, non-fiction text, and black line masters.

Each group should consist of 2-4 students. The groupings can function together for lessons 2.1, 2.2, 2.3 and 2.5.

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Determine an appropriate graphic organizer that would suit the needs of your class as well as the task. The title for each group's graphic organizer should read, "God created ponds (forests, grasslands, deserts, etc.)". Model the use of the resources and graphic organizer using one of the habitats that the groups will not be researching.

The research should include how the habitat provides food, water, light, and space for both plants and animals.

Providing opportunities to share each group's work through oral presentations will require more time than this lesson can accommodate. It is suggested that this sharing occurs at some point during this subtask. This lesson includes formative assessment through observation/checklist and feedback. A checklist should be created for use throughout this subtask.

You will need a variety of resources for each habitat and a graphic organizer (e.g. placemat) and the prayer from lesson 1.1 on chart paper.

Instruction

Time to Teach (15 minutes)

- Ask the students, "What is a habitat?" (Students should refer to the definition developed in the previous lesson)
- Use the definition to discuss its meaning:
 - Where do plants and animals live?
 - How do habitats provide food (water, light, space) for plants and animals?
- Ask: What are some different environments that we would call habitats? (i.e. pond, marsh, forest, etc.)
- Tell the students their list includes different habitats where plants and animals depend on each other for their survival. When God created the world God understood each living thing's need for survival and connected plants and animals within habitats to provide these needs for each other.
- Introduce today's research task
- Model how to use the resources to find information on the habitat their group has been given
- Model the use of the graphic organizer chosen for this work

Time to Practice (20 minutes)

- Students use resources to discover how each habitat provides the necessities of life
- Students record information on a graphic organizer

Time to Share (5 minutes)

- Each group shares their information/graphic organizer with the class by posting it in the classroom when they are finished and circulating around the room to see/read about other habitats
- Pray together the prayer from lesson 1.1

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Lesson 2.2 Carnivore, Herbivore, and Omnivore

Purpose

Students will identify animals that are part of God's creation as carnivores, herbivores, or omnivores.

Essential Understandings

Catholic Curriculum Map Links:

- Demonstrate a caring attitude toward the gifts of creation

Science and Technology:

- Identify animals that are carnivores, herbivores or omnivores (SE 3.6)
- Use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend of features of their habitat to meet important needs (SE 2.3)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and a variety of purposes (SE 2.6)

Assessment for Learning

Use observation to determine each student's understanding of the terms carnivore, herbivore and omnivore.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

In this lesson the students could work on the same habitat as in the previous lesson.

Use formative assessment through observation and a checklist to determine that each student understands the terminology (carnivores, herbivores and omnivores).

You will need the resources collected for the previous lesson, the Creation Story used in the overview, chart paper, markers, and a graphic organizer.

Instruction

Time to Teach (15 minutes)

- Read part of the *Creation Story* - 5th day (birds in the sky, creatures in the water)
- 6th day (land animals)
- Create a class list of animals that God created on these days
- Record definitions for carnivore, herbivore, omnivore
- Using class list of animals derived from the Creation Story, sort animals according to what they eat
- Record animals on a class organizer being used for this lesson
- Instruct/model use of habitat resources to find information

Time to Practice (15 minutes)

- Students use habitat resources to find animals in one specific habitat
- Students sort and record animals on a graphic organizer according to their type (i.e. carnivore, herbivore, omnivore)

Time to Share (10 minutes)

- Students add their animals to a class organizer
- Compare the number of herbivores, carnivores and omnivores in the class list

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Lesson 2.3 Food Chains

Purpose

Students will remember the *Creation Story* to identify the sun as the primary source of energy within a food chain and classify organisms, including humans, according to their role in the food chain.

Essential Understandings

Catholic Curriculum Map Links:

- Demonstrate a caring attitude toward the gifts of creation

Science and Technology:

- Demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (e.g. food, water, air, space and light) (SE 3.1)
- Demonstrate an understanding of food chains as systems in which energy from the sun is transferred to producers and then to consumers (SE 3.2)
- Classify organisms, including humans according to their role in a food chain (SE 3.5)
- Build food chains consisting of different plants and animals, including humans (SE 2.2)
- Use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend of features of their habitat to meet important needs (SE 2.3)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and a variety of purposes (SE 2.6)

Assessment for Learning

Use observation to identify the student's ability to organize their food chain and label each part as producers, consumers, and/or decomposers.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

In this lesson, students will explore their habitat to find that God created each habitat in a way that provides food for the plants and animals. In order for a food chain to be accurate it must start with the sun. Encourage each student to create a different food chain from the habitat they are studying as a group (i.e. a group of 4 students would create 4 different food chains found within their habitat).

Use formative assessment through observation and a checklist (created at the beginning of this subtask).

You will need habitat resources, a graphic organizer, a model of a simple food chain and a copy of the prayer from lesson 1.1 on chart paper.

Instruction

Time to Teach (15 minutes)

- Ask the students, "What is a habitat?" (Refer to the definition posted in the classroom)
- Tell the students, "Today we will discover how habitats provide plants and animals with the food they need for survival?"
- The teacher reads part of the *Creation Story*, focusing on the 4th day when God created the sun, moon and stars
- Teacher asks, "Why is the sun important to plants and animals?"
- Inform the students of the role of the sun in food chains
- Teach food chain concepts – define producers, consumers, decomposers
- Use a graphic organizer to organize a list of plants and animals, including humans according to their role in the food chain (i.e. producers, consumers, decomposers)
- Model a simple food chain using plants and animals, including humans from the list

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Time to Practice (20 minutes)

- Students build and record food chains found in their habitat/research group labeling each part as producers, consumers and/or decomposers

Time to Share (5 minutes)

- Students share their completed work with a partner or small group describing how energy moves from one organism to the next
- Pray the prayer from lesson 1.1. Add to the prayer to thank God for creating the sun which begins all food chains.

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Lesson 2.4 Food Chain Game

Purpose

Students will play the food chain game to explore the relationships between vegetation/plants, herbivores, and carnivores within a balanced habitat. Students identify this as part of God's plan in the creation of the world.

Essential Understandings

Catholic Curriculum Map Links:

- Demonstrate a caring attitude toward the gifts of creation

Science and Technology:

- Demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life (SE 3.1)
- Demonstrate an understanding of food chains as systems in which energy from the sun is transferred to producers and then to consumers (SE 3.2)
- Identify factors that affect the ability of plants and animals to survive in a specific habitat (SE 3.3)
- Demonstrate an understanding of a community as a group of interacting species sharing a common habitat (SE 3.4)
- Identify animals that are carnivores, herbivores or omnivores (SE 3.6)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and for a variety of purposes (SE 2.6)

Assessment for Learning

Use observation and exit slips to identify the student's understanding of relationships within a habitat needed to create a balanced environment as created by God.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

This game was adapted for the grade 4 OCUP unit - "Life Systems: Habitats and Communities".

To prepare for this game you will need to create 20 vegetation cards, 20 herbivore cards and 20 carnivore cards. Creating each group of cards using a different colour would help your students make connections during the game. Also create 2 land developer cards which will be used in another lesson/subtask. When putting students into groups, the vegetation card group should be larger than the other groups. For example if all 20 vegetation cards are played in a game then only 10 herbivore cards will be played and 5 carnivore cards. Still create 20 cards for each group. They will be used in another lesson. You will need 62 index cards (20 vegetation, 20 herbivore, 20 carnivore, 2 land developers), and a large playing space for the game.

The large playing space will be divided into three equal sections. One section is for the vegetation cards, one for the herbivore cards and one for the carnivore cards. A blackboard, bulletin board or large floor area are possible playing spaces.

To play the game have students place their cards into the playing space following your directions. The cards should be placed into the appropriate section of the playing space.

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The main rule to follow is that 2 vegetation cards must be played before 1 herbivore can survive in the habitat. Likewise, 2 herbivores (which means there are 4 vegetation cards) must be played before 1 carnivore can survive in the habitat.

Teacher directs the students during the game as follows:

Place one vegetation card on the playing space. Does this cause any changes for the other groups? (No)

Place another vegetation card on the playing space. Does this cause any changes for the other groups? (Yes, one herbivore card can be placed on the board.)

Continue directing the students, one vegetation card at a time. Eventually the board will fill up with many vegetation cards, some herbivore cards and fewer carnivore cards.

The exit slip has students respond to one of the following sentence starters: Today I learned..., I am very confused by..., I wonder... A pre-made slip can be found in "A Guide to Effective Literacy Instruction, Grades 4-6, Volume 2" on page 96.

Use formative assessment through observation and exit slips.

Instruction

Time to Teach (10 minutes)

- Explain how the game is played.

Time to Practice (20 minutes)

- Students play the game following the directions of the teacher.
- Inform the students that this is a balanced habitat. God created the balance so that plants and animals would provide food for each other within a habitat.

Time to Share (10 minutes)

- Students reflect on their learning through the use of exit slips.

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Lesson 2.5 Interactions in a habitat

Purpose

Students will investigate factors that occur naturally and disrupt the balance within a habitat.

Essential Understandings

Catholic Curriculum Map Links:

- Demonstrate a caring attitude toward the gifts of creation

Science and Technology:

- Identify factors that affect the ability of plants and animals to survive in a specific habitat (SE 3.3)
- Demonstrate an understanding of a community as a group of interacting species sharing a common habitat (SE 3.4)
- Use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend on features of their habitat to meet important needs (SE 2.3)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and a variety of purposes (SE 2.6)

Assessment for Learning

Use observation to ensure the student understands the interactions within a habitat and the factors that affect the ability of plants and animals to survive.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

In this lesson students will move beyond their understanding of balance within a habitat and explore how natural disasters, weather, etc. affect parts of the food chain which will also affect the other parts of the food chain. For example: If a fire burns through a forest, then the vegetation is lost. The herbivores have nothing to eat and will move to find food. The carnivores will also move out since the herbivores have left the forest. In this lesson, develop ideas that the students can relate to in your community (e.g. forest fires, construction, etc). In lesson 3.2 – Depletion/Extinction you will connect understandings from today’s lesson.

Use formative assessment through observation.

You will need the Food Chain Game cards created for lesson 2.4

Instruction

Time to Teach (20 minutes)

- Recall the Food Chain Game
- Create a balanced habitat in the playing space with the help of your students
- Question: “How do we know this is a balanced habitat?”
- Inform the students that nature often creates imbalance.
- Ask them “How could nature affect the balance within a habitat?”
- Use one of their examples to explore the effects on a habitat.
- The imbalance could cause some of the following scenarios:
 - “What would happen to the habitat if 2 herbivores moved out?”
 - “What would happen to the habitat if 20 herbivores move in?”
 - “What would happen to the habitat if 20 carnivores move in?”
- Show the students what these changes would look like in the playing space.

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Time to Practice (15 minutes)

- Students work in small groups to create other scenarios of imbalance and their results.
- Groups discuss the effects of each scenario.

Time to Share (5 minutes)

- Each group shares and explains one of their scenarios with the class.

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Subtask 3: Human Impact

Description:

The students will explore human interactions with the natural environment and develop an understanding of a variety of viewpoints within the community including our call as Christians to care for and build God's kingdom.

Lesson 3.1 Human Dependence

Purpose

Students will prepare a news report which recognizes human dependency on various features of a habitat, important in meeting specific needs, and identifies our responsibility to respond to God's call to use the gifts of creation wisely.

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God's gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the "Kingdom" (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Describe ways in which humans are dependent on natural habitats and communities (SE 3.10)
- Analyze the positive and negative impacts of human interactions with natural habitats and communities, taking different perspectives into account, and evaluate ways of minimizing the negative impacts (SE 1.1)
- Use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend on features of their habitat to meet important needs (SE 2.3)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and for a variety of purposes (SE 2.6)

Language

- Determine whether the ideas and information they have gathered are relevant and adequate for the purpose, and do more research if necessary (SE 1.6)

Assessment for Learning

Use observation to ensure students understand the purpose of their news report.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

Before this lesson, provide an opportunity for the students to visit an area where there is obvious human impact on the natural environment (e.g., quarry, landfill, golf course, urban area, construction site). If this is not feasible, use video, websites, or literature to provide the information.

When discussing God's call to use our resources wisely use the opportunity to develop and understand the Christian point of view.

Prior to this lesson students should be taught how to write a news report.

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The news report should include information about what is happening to the environment, how this action is affecting the balance within the habitat, as well as a response to our call to care for and build up God's creation which should include ways of minimizing the negative impact. The focus of the news report could relate to one way humans are impacting the environment or how different types of human impact have affected one particular habitat. You might choose to create/provide sample issues that the students could be responding to in their news report.

Use formative assessment through observation.

A rating scale could be used to evaluate the content of the news report and the student's response to how we can responsibly answer God's call.

You will need chart paper, markers and human impact scenarios for the students to use in their news report.

Instruction

Time to Teach (20 minutes)

- Make a list of ways humans are dependent on natural habitats and communities (e.g., for water, medicine, flood control in wetlands, leisure activities, various uses of natural materials)
- Recall the field trip and discuss/record the human impact on the environment
- Think-pair-share the positive and negative impacts of human interactions with natural habitats and communities
- Compare the human needs with human impact
- Discuss: God calls us to use our resources wisely. How can we care for and build up God's gifts of creation?

Time to Practice (20 minutes)

- Students write a one paragraph news report or create a newscast about how the environment has been effected by human impact.

Time to Share (10 minutes)

- Students present their "news" to the class.

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Lesson 3.2 Depletion/Extinction

Purpose

Students will remember God's call to care for and build up the Kingdom when responding to issues related to depletion or extinction.

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God's gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the "Kingdom" (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Identify reasons for the depletion or extinction of a plant or animal species, evaluate the impacts on the rest of the natural community, and propose possible actions for preventing such depletions or extinctions from happening (SE 1.2)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and for a variety of purposes (SE 2.6)

Language

- Identify their point of view and other possible points of view on the topic, and determine whether their information sufficiently supports their own view(SE 2.5)

Assessment for Learning

Use observation to assess the understanding of depletion and extinction as well as a response to answer God's call.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

In this lesson students will respond to one of the sample issues found in the S&T curriculum document on page 85 under the specific expectation 1.2 and/or you could create your own issues.

When the land developer is introduced use the opportunity to develop and understand the land developer's point of view.

The journal response in "Time to Practice" could be in the form of a prayer.

Use formative assessment through observation.

You will need Food Chain Game cards.

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Instruction

Time to Teach (20 minutes)

- Recall the Food Chain Game activity in lesson 2.5
- Discuss the imbalance and how different parts of the food chain were effected
- Ask the students: “What would happen if a land developer wanted to build on this habitat created in the game?”
- Introduce/define depletion or extinction as another issue faced by habitats
- Ask the students: “What causes depletion or extinction?”
- Recall God’s call for us to use our resources wisely.
- Think-pair-share possible ways we can prevent such depletions/extinctions from happening so that we can answer God’s call.

Time to Practice (15 minutes)

- Students respond to a depletion/extinction issue in their journals remembering God’s call.

Time to Share (5 minutes)

- Students share their response with a partner/small group/whole class

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Lesson 3.3 Human Interactions

Purpose

Students will consider different viewpoints when responding to the question: How can we continue to draw benefits from the natural environment and still ensure that it is there to benefit future generations?

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God's gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the "Kingdom" (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Analyze the positive and negative impacts of human interactions with natural habitats and communities, taking different perspectives into account, and evaluate ways of minimizing the negative impacts (SE 1.1)
- Identify reasons for the depletion or extinction of a plant or animal species, evaluate the impacts on the rest of the natural community, and propose possible actions for preventing such depletions or extinctions from happening (SE 1.2)
- Use appropriate science and technology vocabulary in oral and written communication (SE 2.5)
- Use a variety of forms to communicate with different audiences and for a variety of purposes (SE 2.6)

Language

- Identify their point of view and other possible points of view on the topic, and determine whether their information sufficiently supports their own view (SE 2.5)

Assessment for Learning

Use observation to determine student understanding of points of view.

Use exit slips to provide information on students' thinking. (See Teacher Notes in lesson 2.4 to format exit slips.)

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

In this lesson the students will explore human response to the impact on habitats from different perspectives. The students will need to understand the perspectives of different members of the community (i.e. a housing developer, a family in need of housing, an ecologist, and a Christian answering God's call to care for and build up God's kingdom). In order to be successful with the goals of this lesson a thorough understanding of the different viewpoints will have to be addressed in your lesson. Gather resources that will help your students understand the different points of view from members of a community. (See the unit overview – page 84 - for some descriptions of people in a community related to this task.) Connecting this focus with issues in/around your community will help your students understand the importance of each perspective. The recorded information will be used in the Culminating Task.

Use formative assessment through observation and exit slips.

You will need graphic organizer (e.g. placemat), resources to teach point of view.

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Instruction

Time to Teach (15 minutes)

- Ask the students: “How can we continue to draw benefits from the natural environment and still ensure that it is there to benefit future generations?”
- Present points of view of different members of the community
- Ask the students how a Christian group, responding to God’s call, would answer the question: “How can we continue to draw benefits from the natural environment and still ensure that it is there to benefit future generations?”
- Record the response in a graphic organizer that will be used in the time to practice activity

Time to Practice (20 minutes)

- Students work in small groups to develop a response to the question from different perspectives within the community
- Students record their information in a graphic organizer

Time to Share (5 minutes)

- Students reflect on their learning through the use of exit slips.

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Subtask 4: Culminating Performance Task

Description:

As a culminating task students will participate in a mock town hall meeting, in the form of a debate, to answer the Unit Guiding Question (How does development affect natural habitats in your community and how can we answer God’s call to care for and build up creation?), presenting arguments for and against urban development and the accompanying habitat loss.

Preparation for the town meeting will include:

- Identifying the advantages and disadvantages of a proposed urban development and the accompanying habitat loss, considering different perspectives, including the viewpoint that God created the world and we are called to care for creation
- Researching potential concerns of the local housing developers, families in need of housing, environmentalists, municipal officials, citizens and local business owners

The students will present their arguments for or against development in a mock town hall meeting.

Lesson 4.1 Advantages and Disadvantages

Purpose

Students will prepare jot notes identifying the advantages and disadvantages of a proposed urban development and the accompanying habitat loss.

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God’s gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the “Kingdom” (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Analyse the effects of human activities on habitats and communities (OE 1)
- Investigate the interdependence of plants and animals within specific habitats and communities (OE 2)
- Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them (OE 3)

Language

- Determine whether the ideas and information they have gathered are relevant and adequate for the purpose, and do more research if necessary(SE 1.6)

Assessment for Learning

Use observation to determine the strengths and needs of each student.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

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Teacher Notes

The culminating task asks the students to make a connection to urban development within their own community (or a nearby community). The habitat being affected in your community will be different than other communities. You will need to make the necessary connections with your students to understand what habitat(s) are being affected.

Create a checklist/contract for the students to keep track of the steps they must complete to be successful with this task.

Use formative assessment through observation and student checklist/contract.

You will need copies of the expectations for the culminating task, the rubric and the checklist/contract for each student.

Instruction

Time to Teach (10 minutes)

- Instruct students on the culminating task including time lines
- Describe the habitat that will be destroyed in your community
- Discuss the rubric
- Refer to lesson 3.1 to recall the positive and negative impacts of human interactions
- Model the use of jot notes

Time to Practice (25 minutes)

- Students prepare jot notes identifying the advantages and disadvantages of a proposed urban development and the accompanying habitat loss.

Time to Share (5 minutes)

- Students complete checklist/contract indicating what they have completed

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Lesson 4.2 Points of View

Purpose

Students will develop arguments for and against urban development from various points of view and to begin to examine those points of view to see if they reflect our Christian call to be responsible citizens with a caring attitude toward creation.

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God's gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the "Kingdom" (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Analyze the effects of human activities on habitats and communities (OE 1)
- Investigate the interdependence of plants and animals within specific habitats and communities (OE 2)
- Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them (OE 3)

Language

- Identify their point of view and other possible points of view on the topic, and determine whether their information sufficiently supports their own view(SE 2.5)

Assessment for Learning

Use observation to determine the strengths and needs of each student.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

This lesson requires a thorough understanding of point of view (after careful research an opinion formulated based on factual information available on an issue) and the concerns related to urban development of different community groups. Organize the students to so that all of the viewpoints within the community are researched and represented in the classroom. Ask students to examine the various viewpoints to see if the Christian view, as responsible and caring citizens, is connected to the viewpoints (i.e. the land developer, the ecologist, the family in need of housing, the natural habitat for animals and wildlife, etc.)

Use formative assessment through observation and student checklist/contract. You will need a graphic organizer and the student checklist/contract.

Instruction

Time to Teach (10 minutes)

- Recall points of view from lesson 3.3
- Discuss various concerns of different members of the community related to the urban development
- Assess need for further research around the initiative
- Model the graphic organizer to be used for this task

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Time to Practice (25 minutes)

- Students select one point of view and develop arguments for and against the urban development
- Develop a graphic organizer to display points of view under headings such as: Who? What do they want to do? Why? Impact?
- Students reflect how their arguments present the perspective of a Christian answering God's call

Time to Share (5 minutes)

- Students complete checklist/contract indicating what they have completed

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Lesson 4.3 Planning for Debate

Purpose

Students will choose a position (for or against urban development) to research and prepare for the debate.

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God's gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the "Kingdom" (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Analyze the effects of human activities on habitats and communities (OE 1)
- Investigate the interdependence of plants/animals within specific habitats and communities (OE 2)
- Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them (OE 3)

Language

- Identify their point of view and other possible points of view on the topic, and determine whether their information sufficiently supports their own view (SE 2.5)
- Determine whether the ideas and information they have gathered are relevant and adequate for the purpose, and do more research if necessary (SE 1.6)

Assessment for Learning

Use observation to determine the strengths and needs of each student.

Provide feedback to students to ensure their understandings are accurate.

Use assessment information to identify the need for individual or small group instruction.

Teacher Notes

This lesson is the final stage of preparation before the debate. During this lesson assess the students' need for extra time to research or formulate their arguments to support their position on the issue from a Christian perspective. Provide the time if it is needed. The list of arguments from the previous lesson should be used and further developed during this lesson. Make sure you have equal representation from the students for all sides of the debate.

Use formative assessment through observation and student checklist/contract.

Instruction

Time to Teach (10 minutes)

- Teach the students how to respectfully develop arguments supporting their position in a debate

Time to Practice (25 minutes)

- Students select a position (for or against) the urban development
- Students organize and prepare arguments for the debate
- Students practice for the debate with a partner of opposing view

Time to Share (5 minutes)

- Students complete checklist/contract indicating what they have completed

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Grade 4

Lesson 4.4 Town hall Debate

Purpose

Students will participate in a mock town hall meeting respectfully sharing their Christian viewpoint in presenting arguments for or against urban development in their community.

Essential Understandings

Catholic Curriculum Map Links:

How do I use the gift of my life?

- Identify ways that they take responsibility to be a responsible citizen at school and in the world.

How do I care for and build up God's gifts of creation?

- Demonstrate a caring attitude toward the gifts of creation and building the "Kingdom" (recycling, watering plants, taking part in social justice projects).

Science and Technology:

- Analyze the effects of human activities on habitats and communities (OE 1)
- Investigate the interdependence of plants/animals within specific habitats and communities (OE 2)
- Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them (OE 3)

Language

- Demonstrate an understanding of appropriate speaking behavior in a variety of situations, including paired sharing and small- and large-group discussions(SE 1.2)
- Communicate in a clear, coherent manner, presenting ideas, opinions, and information in a readily understandable form(SE 2.3)

Assessment of Learning

Use the rubric to assess the culminating task.

Teacher Notes

This lesson gives the students an opportunity to share their understandings during a debate. Depending on class size you could repeat this lesson format, for smaller group debates, over a number of days. At the end of the debate, lead the class in prayer. The prayer should reflect on the students' understanding to answer God's call to care for and build up creation, as was presented in the debate. Each student could make a promise to God identifying something they will do to answer God's call.

Use summative assessment through the use of the rubric.

You will need a copy of the rubric for each student and the prayer from lesson 1.1 on chart paper.

You will also need to set up the classroom to resemble a town hall meeting.

Instruction

Time to Teach (5 minutes)

- Organize the students for the debate

Time to Practice (20 minutes)

- Students present their arguments at the mock town hall meeting

Time to Share (15 minutes)

- Discuss the results of the debate as a whole class
- Lead the class in a prayer (from lesson 1.1) end the prayer with each student making a promise to God identifying ways they will take responsibility to care for and build up the gifts of creation.

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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 habitats (<i>e.g., facts and terminology</i>)	The student: <ul style="list-style-type: none"> demonstrates limited knowledge of habitats 	The student: <ul style="list-style-type: none"> demonstrates some knowledge of habitats 	The student: <ul style="list-style-type: none"> demonstrates considerable knowledge of habitats 	The student: <ul style="list-style-type: none"> demonstrates thorough knowledge of habitats
Understanding of habitats as communities where living things rely on each other in order to survive	The student: <ul style="list-style-type: none"> demonstrates limited understanding of habitats as communities where living things rely on each other in order to survive 	The student: <ul style="list-style-type: none"> demonstrates some understanding of habitats as communities where living things rely on each other in order to survive 	The student: <ul style="list-style-type: none"> demonstrates considerable understanding of habitats as communities where living things rely on each other in order to survive 	The student: <ul style="list-style-type: none"> demonstrates thorough understanding of habitats as communities where living things rely on each other in order to survive
Thinking and Investigation – The use of critical and creative thinking skills and inquiry and problem-solving skills and/or processes				
Use of initiating and planning skills and strategies (<i>e.g., identifying the problem, selecting resources</i>)	The student: <ul style="list-style-type: none"> uses initiating and planning skills and strategies with limited effectiveness 	The student: <ul style="list-style-type: none"> uses initiating and planning skills and strategies with some effectiveness 	The student: <ul style="list-style-type: none"> uses initiating and planning skills and strategies with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses initiating and planning skills and strategies with a high degree of effectiveness
Use of processing skills and strategies (<i>e.g., recording and gathering evidence and data</i>)	The student: <ul style="list-style-type: none"> uses processing skills and strategies with limited effectiveness 	The student: <ul style="list-style-type: none"> uses processing skills and strategies with some effectiveness 	The student: <ul style="list-style-type: none"> uses processing skills and strategies with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses processing skills and strategies with a high degree of effectiveness
Use of critical/creative thinking processes, skills and strategies to justify using the environment wisely according to God’s will	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to justify using the environment wisely according to God’s will with limited effectiveness 	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to justify using the environment wisely according to God’s will with some effectiveness 	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to justify using the environment wisely according to God’s will with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses creative/critical thinking skills and strategies to justify using the environment wisely according to God’s will with a high degree of effectiveness
Communication - The conveying of meaning through various forms				
Clear expression and logical organization of ideas and information in oral and written forms	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information with limited effectiveness 	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information with some effectiveness 	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information with considerable effectiveness 	The student: <ul style="list-style-type: none"> expresses and organizes the ideas and information with a high degree of effectiveness

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Communication for a town meeting in order to persuade during a debate	The student: <ul style="list-style-type: none"> communicates for a town meeting in order to persuade during a debate with limited effectiveness 	The student: <ul style="list-style-type: none"> communicates for a town meeting in order to persuade during a debate with some effectiveness 	The student: <ul style="list-style-type: none"> communicates for a town meeting in order to persuade during a debate with considerable effectiveness 	The student: <ul style="list-style-type: none"> communicates for a town meeting in order to persuade during a debate with a high degree of effectiveness
Use of conventions, vocabulary, and terminology related to habitats in oral, and/or written forms	The student: <ul style="list-style-type: none"> uses conventions, vocabulary, and terminology of habitats with limited effectiveness 	The student: <ul style="list-style-type: none"> uses conventions, vocabulary, and terminology of habitats with some effectiveness 	The student: <ul style="list-style-type: none"> uses conventions, vocabulary, and terminology of habitats with considerable effectiveness 	The student: <ul style="list-style-type: none"> uses conventions, vocabulary, and terminology of habitats with a high degree of effectiveness
Application - The use of knowledge and skills to make connections within and between various contexts				
Application of knowledge of habitats when preparing arguments for a debate	The student: <ul style="list-style-type: none"> applies knowledge of habitats when preparing arguments for a debate with limited effectiveness 	The student: <ul style="list-style-type: none"> applies knowledge of habitats when preparing arguments for a debate with some effectiveness 	The student: <ul style="list-style-type: none"> applies knowledge of habitats when preparing arguments for a debate with considerable effectiveness 	The student: <ul style="list-style-type: none"> applies knowledge of habitats when preparing arguments for a debate with a high degree of effectiveness
Transfers knowledge of habitats to creating an opinion from different perspectives	The student: <ul style="list-style-type: none"> transfers knowledge of habitats to creating an opinion from different perspectives with limited effectiveness 	The student: <ul style="list-style-type: none"> transfers knowledge of habitats to creating an opinion from different perspectives with some effectiveness 	The student: <ul style="list-style-type: none"> transfers knowledge of habitats to creating an opinion from different perspectives with considerable effectiveness 	The student: <ul style="list-style-type: none"> transfers knowledge of habitats to creating an opinion from different perspectives with a high degree of effectiveness
Making connections between science, society, and the environment through the understanding of God's call to care for creation	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of God's call to care for creation with limited effectiveness 	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of God's call to care for creation with some effectiveness 	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of God's call to care for creation with considerable effectiveness 	The student: <ul style="list-style-type: none"> makes connections between science, technology, society and the environment through the understanding of God's call to care for creation with a high degree of effectiveness
Proposing courses of practical action to answer God's call to care for and build His "Kingdom"	The student: <ul style="list-style-type: none"> proposes courses of practical action to answer God's call of limited effectiveness 	The student: <ul style="list-style-type: none"> proposes courses of practical action to answer God's call of some effectiveness 	The student: <ul style="list-style-type: none"> proposes courses of practical action to answer God's call of considerable effectiveness 	The student: <ul style="list-style-type: none"> proposes highly effective courses of practical action to answer God's call