



SCIENCE AND TECHNOLOGY IN CATHOLIC EDUCATION

*Enlightening Students About the
Gospel Values
Related To
Science and Technology
Curriculum*

Grades One to Six

September 2004

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“All discovery and research are an exploration into the mind of God: all knowledge is a share in the infinite life of God. The contemplation of God through that which falls within our experience can be one of the most satisfying of all intellectual activities. In all that is true, good and beautiful, the mind glimpses a marvelous reflection of the reality, which we call God. This is to know him in his creation just as we can know something of the artist from what he expresses of himself in his work of art. It is fundamental to our religious tradition to regard all reality as God-given and therefore to rule out in advance any possibility of contradictory truths. Religion and knowledge of every kind can never be in conflict; the spirit of fearless and objective enquiry should be characteristic of all Catholic education.”

Address to Head teachers. September, 1988.
Cardinal Basil Hume, late Archbishop of Westminster.

CATHOLIC GRADUATE EXPECTATIONS

Institute for Catholic Education

- A discerning believer formed in the Catholic Faith community who celebrates the signs and sacred mystery of God's presence through word, sacrament, prayer, forgiveness, reflection and moral living.
- An effective communicator who speaks, writes and listens honestly and sensitively, responding critically in light of gospel values.
- A reflective, creative and holistic thinker who solves problems and makes responsible decisions with an informed moral conscience for the common good.
- A self-directed, responsible, lifelong learner who develops and demonstrates their God-given potential.
- A collaborative contributor who finds meaning, dignity and vocation in work which respects the rights of all and contributes to the common good.
- A caring family member who attends to family, school, parish, and the wider community.
- A responsible citizen who gives witness to Catholic social teaching by promoting peace, justice and the sacredness of human life.

Catholic education views human life as an integration of body, mind and spirit. Rooted in this vision, Catholic education fosters the search for knowledge as a lifelong spiritual and academic quest. The expectations of Catholic graduates, therefore, are described not only in terms of knowledge and skills, but in terms of values, attitudes and actions.

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FORWARD

Science and Technology: A Catholic Perspective

“Catholic schools bring a distinctive perspective to science and technology education. This perspective originates in a Catholic worldview whose features include:

- an understanding of nature as imbued with the hidden presence of God,
- a moral vision rooted in faith as essential to the learning of science and technology,
- skills that explore the connections between science and technology to the world outside the school in relation to the common good for all.”

OECTA Teacher Resources. Implementing the Ontario Curriculum Grades 1-8 Science & Technology. 1998.

This document was created to assist teachers with integrating our Gospel values with the topics of Science and Technology. The Catholic Graduate Expectations provide a framework that expresses the values we hope students develop personally when analyzing scientific discoveries and technological innovations and their impact on everything in the world around us. As Cardinal Basil Hume aptly stated,

“Religion and knowledge of every kind can never be in conflict; the spirit of fearless and objective enquiry should be characteristic of all Catholic education.”

The goal of naming the Gospel values that are inherent in all dimensions of our Catholic Education go hand in hand with the current efforts to incorporate character education in our schools. This is a deliberate effort to cultivate our Catholic virtues as positive personal attributes among the school community members. In particular, the qualities of respect for the environment, reverence for God’s creation, and responsible care for our earth are promoted explicitly, modeled, taught and celebrated. We would then be incorporating Character education into our existing curriculum in an intentional and systematic manner. This would contribute to building and strengthening York Catholic Communities of Faith. Gospel values and the Ontario Catholic Graduate Expectations naturally weave Character Education into curriculum.

Our choices and our actions express our moral values, therefore it is critical that clear, strong, moral values are brought to all aspects of science and technology. These moral values provide the lens through which to analyze the impact of science and technology in society. Everything that is possible in science is not necessarily a moral good. As teachers and as Catholics, our obligation is to help our students always work and act for the common good of our global village.

Stewardship of the earth and its sacred gifts is a foundation concept embedded in the Ontario Graduate Expectations. We must help students understand that we have been entrusted to care for all creation, acting as guardians, not owners of the earth and its resources. Therefore, we must act according to God’s plan for the time we live on the earth, which includes teaching students the wise use of resources.

We hope teachers will find this resource document helpful in enlightening the Catholic Gospel values which are related to Science and Technology.

Organization of the Document

In order to assist teachers in planning science and technology units of study, this document is organized in the same manner as the Ontario Curriculum. For each topic and strand, there is an introduction of the topic from the Ontario Curriculum matched with a Catholic Perspective. It is hoped that this will provide a clear direction to integrate Catholic values with a specific topic.

Following the introduction, a correlation shows the expectations of “Relating Science and Technology to the World Outside the School” and the corresponding Gospel Values.

Relating Science and Technology to the World Outside the School:	Gospel Values
<ul style="list-style-type: none"> • Design and make a stable structure that will support a given mass and perform a specific function – see examples below • Use appropriate materials to strengthen and stabilize what they have designed. 	<ul style="list-style-type: none"> † Spirituality † Creation † Design † Quality of life

These expectations were interpreted in the context of Catholic Gospel values to derive “Focus Concepts” with related “Sample Demonstrations”. It is hoped that these suggestions will be helpful in integrating Catholic Gospel Values with the Science and Technology strand and topic.

Focus Concepts	Sample Demonstrations
<ul style="list-style-type: none"> † Structures serve as meeting places for faith communities † Look at structures in a church (e.g., alter, crucifix, stable, crèche, steeple, arches, tabernacle) 	<ul style="list-style-type: none"> † Build a tent (Unit 1, theme 1 as a gathering place). † Build any one of the listed structures. † Create a diorama that displays the Scripture reading of Matthew 7:21-27 or Luke 6:47-49.

experiences for students to demonstrate their understanding and awareness. Some of these resources are available in your school library. (See Bibliography for more information.)

RESOURCES:

Fully Alive: Family Life

- † Theme 4: *Growing in Commitment*
- † Topic 2: *Learning about Decisions*
- † Topic 3: *We Get Help With Our Decisions*

Religious Education Program:

In the Spirit We Belong

- † Unit 1: Theme 2- *A Special Gathering Place: The Meeting Tent*
- † Unit 1: Theme 2 - *Dreaming with God*
- † Unit 2: Theme 4 - *The Holy Spirit is at work among us.*
- † Unit 10: Theme 28 - *We are the Church and Come to the church as God's gathering*

Additional Resources:

- † *Science Everywhere Catholic Perspective*
- † *Celebrating with Science: Unit 5- Rocks and Stones*
- † *Celebrating Our Environment: Unit 24- Rock of Strength*

a brief prayerful reflection summarizing the Gospel Values related to the topic can provide a meaningful way to reinforce the connection between our faith and the concepts studied.

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*Beesley, Michael. Celebrating with Science. Collective Worship in the Primary School. Glebe House: Southgate, 1993.

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Hammond, Merryl and Rob Collins. One World, One Earth: Educating Children for Social Responsibility. Gabriola Island: New Society, c1993.

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Vos Wezeman, Phyllis and Jude Dennis Fournier. 20 More Prayer Lessons for Children. Mystic: Twenty-Third, c1997.

* Available in your school library.

**Available from the Education Resource Centre.

All other resources are available for purchase from Joseph's Inspirational.

Life Systems

Characteristics and Needs of Living Things

"The study of Life Systems in grade one focuses on an investigation of the characteristics and basic needs of living things. Students will explore aspects of movement and behaviour in humans and other animals, and will learn about their nutritional requirements. Students will also explore some basic aspects of growth in animals and plants. In all their investigations, students will continually refine their ability to observe, using all five senses, and will attempt to describe their observations as accurately as possible."

The Ontario Curriculum. Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

The study of Life Systems in grade one focuses on an investigation of the characteristics and basic needs of living things. Our Catholic tradition reflects our understanding of the sacramentality of the earth. A study of the basic needs of living things brings us closer to God and the work of God's creation involved in the existence of all living things. Through their explorations, students will be guided to develop a sense of awe, wonder and reverence for all God's creatures. Students will learn how to care for these gifts through stewardship of the Earth and all its living things.


Focus:

Reverence and care for all Creation

Concept:

Deepen understanding of the basic needs of all Creation.

**Grade One
Life Systems
Characteristics of Living Things**

Focus Concepts	Sample Demonstrations
<ul style="list-style-type: none"> † Deepen understanding of how the gifts of creation show <i>God's</i> care † Understand the need to care for the earth  † Focus on caring for various aspects of creation through an earth collage † Respond to a story of creation based on <i>Genesis</i> 	<ul style="list-style-type: none"> † Create a nature collage made of twigs, seeds, leaves, etc. † Dramatize the <i>Creation</i> story † Respond in artwork to the <i>Creation</i> story



Relating Science and Technology to the World Outside the School:	Gospel Values
<ul style="list-style-type: none"> ▪ Compare the basic needs of humans with the needs of other living things (e.g., for the need for food, air, water, light); ▪ Identify ways in which individuals can maintain a healthy environment for themselves and for other living things 	<ul style="list-style-type: none"> † Sacredness of Life † Interdependence † Stewardship † Common Good

RESOURCES

Religious Education Program:
We Belong To God

- † Unit 5- Theme 15: *God Takes Care of the Earth*
- † Exploring new life in nature - Unit 9-Theme 25: *Praise God for New Life*

Fully Alive: Family Life

- † *Beauty of Creation- Theme 1*
- † *The World is an exciting place- Theme 5*
- † *Care for the Earth - Theme 5*

Additional Resources:

- † *20 more Prayer Lessons for Children, # 35 Creation*
- † *God's Paintbrush- see bibliography*

Matter and Materials

Characteristics of Objects and Properties of Materials

In Grade 1, students are introduced to the concept of materials through exploration of various objects in their immediate surroundings. Students will use their senses to identify various materials and objects. In doing this, they will learn to make a clear distinction between objects and materials: they will learn that objects are made from materials and that materials have specific properties. They will also learn to describe these properties clearly and precisely. By making objects out of various materials, they will begin to understand that there is a connection between the properties of materials and the specific purposes for which the materials are used.

The Ontario Curriculum. Science and Technology. Grades 1-8. 1998.

A Catholic Perspective

This strand will help the students experience the excitement of discovering the great variety of materials that are all around us. These materials are used to make a vast array of objects we see everywhere. The foundation of recognizing our human giftedness in designing and creating new things is to recognize and acknowledge God as the first Creator. Indeed, we are co-creators with God when we use our abilities to design and create new things. We celebrate the gifts of our five senses, since it is through the use of our senses that we come to experience everything that is around us.

Focus:

Discovery of materials, both natural and human-made.

Concept:

Using the five senses to discover the variety and potential of materials around us.

Grade One
Matter and Materials
Characteristics of Objects and Properties of Materials

Relating Science and Technology to the World Outside the School:

Gospel Values

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ▪ Demonstrate ways of reusing materials and objects in daily activities. ▪ Describe how properties of materials help us learn about natural and human-made objects.
 ▪ Recognize that objects made of certain materials can be recycled. | <ul style="list-style-type: none"> † Discovery † Creativity † Design † Stewardship |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|



Focus Concepts

Sample Demonstrations

- † The 3 R's: reduce, reuse and recycle
- † Deepening an awareness of amazing variety in creation through identifying properties of materials
- † Recognizing that our senses provide the experience of discovering materials.



- † Set a time to pray in thanksgiving for the amazing potential we each have as co-creator with God.
- † Have a "use no paper" or "use only recycled paper" day
- † Create a mobile that highlights the different qualities of both natural and human-made materials (e.g, bendability, hardness, mass).

RESOURCES

Religious Education Program:
We Belong To God

- † Unit 5: Theme 15-God takes care of the world
- † to express wonder, praise and thanks for God as a creator
- † to explore all of creation as a gift from God

Fully Alive: Family Life

- † The World Is An Exciting Place To Be- Theme 5 - Topics 1, 2

Additional Resources:

- † **Science Everywhere: A Catholic Perspective** (Sensational & Whatever You Wear)
- † Celebrating with Science - Unit 4-8 Celebrating with Senses.

Energy and Control

Energy in our Lives

Energy has many forms and is an integral part of our daily lives. Students need to become aware that they use many forms of energy every day and to realize that, as the agents who activate and control the source of energy, they are responsible for the amount of energy they consume. This awareness will help students develop a better understanding of the importance of monitoring their energy use. Students should also come to realize that all living things depend on some form of energy for survival.

The Ontario Curriculum. Science and Technology. Grades 1-8. 1998.

A Catholic Perspective

God's wonderful gifts of Creation are an integral part of this topic. Sources of energy and the potential for energy have been given to us in the wonder of God's Creation. When we realize the preciousness of a gift, we more readily will treasure that gift. We all need to take time to tune in and awaken our awareness to the many treasures around us. We receive the gifts of energy in our world and must take responsibility to care for them. In a further dimension, the spiritual energy of God's love that exists within each of us is there because of God's great presence within us. We praise God and give thanks for all these gifts.

Focus:

Care for the use of energy.

Concept:

Becoming more aware of our responsibility to care for energy.

**Grade One
Energy and Control
Energy in Our Lives**

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- † Identify devices they use that consume energy and list things they can do to reduce energy conservation.

- † Stewardship
- † Lifestyle
- † Responsibility
- † Conservation



Focus Concepts

Sample Demonstrations

- † Growing responsibility toward the use of energy
- † Identifying ways we can reduce the use of energy.



- † Count the number of light switches in their homes. List ideas of how we can avoid turning on too many lights.
- † Make a chart describing what changes would happen if a power failure takes place.
- † Ask students to decide on classroom helpers who will rotate through specific energy-saving jobs to develop good energy saving habits. E.g. Lights controller, tidy-up crew, etc.

RESOURCES

**Religious Education Program:
We Belong To God**

- † Unit 5- Theme 15: God Takes Care of the Earth
- † Unit 9-Theme 25: Praise God for New Life

Fully Alive: Family Life

- † Topic 1 - Creation is a gift from God
- † Topic 2 - God's World is my Home

Additional Resources:

- † Celebrating with Science - #18 Light and Life- Energy.
- † *Dear Children of the Earth* by Schim Schimmel

Structures and Mechanisms

Everyday Structures

Students are surrounded by a wide variety of objects and structures that have distinctive shapes, patterns, and purposes. What's more, there are also different categories of structures: solid structures would include such things as stone walls and dams, frame structures would include bridges and bicycles, and shell structures would include domes and tents. By observing and manipulating different structures in natural and human-made environment, students in Grade 1 will begin to identify shapes that are repeated in various patterns, and shapes and patterns that are common to most structures. Students will also be introduced to the concept of a system. In Grade 1, students will observe and use systems that they encounter in daily life and that involve a single input, which is the action required to set a system in operation (e.g., flicking a light switch), and a single output, which represents the response of the system.

The Ontario Curriculum, Science and Technology. Grades 1-8. 1998.

A Catholic Perspective

The study of everyday structures can readily be extended to include the distinctive shapes, patterns and purposes of churches, synagogues, mosques and temples. These buildings have a particular purpose to provide a place for people to gather for religious and spiritual reasons. Our Catholic Churches are special holy places where we gather to worship God and celebrate with the faith Community. To understand better some of the Gospel stories, it is helpful for the children to know what the structures in land of Jesus were like, for example, the homes, shops and the Temple of Jerusalem.

Focus:

Structures have a certain design according to their purpose and use.

Concept:

Innate in our creation, both humans and animals know how to construct structures for living.

**Grade One
Structures and Mechanisms
Everyday Structures**

Relating Science and Technology to the World Outside the School:

Gospel Values

- † Distinguish between structures and devices made by humans (e.g. houses, toys) and structures found in nature (e.g. bird nests, honeycombs).
- † Identify structures whose function is indicated by their shape

- † Creativity
- † Aesthetics
- † Gifts and talents
- † Originality



Focus Concepts

Sample Demonstrations

- † Homes in nature
- † Valuing human work as it relates to homes for people



- † Build a simple structure, e.g. house of stir sticks, tent using straws and fabric
- † Examine pictures of human and animal homes around the world and how they are adapted for the climate

RESOURCES

**Religious Education Program:
We Belong To God**

- † Unit 2 - Jesus Welcomes Us. Theme 5 - Jesus lived in Galilee
- † Unit 5 - I'll always be with you. Theme 15 - God takes care of the world.

Fully Alive: Family Life

- † Theme 5: Living in the World
- † Topic 1: The World is an Excitin Place To Be
- † Topic 2: God's World Is My Horr

Additional Resources:

- † *OECTA The Land Where Jesus Lived* (for visuals).
- † *What Will We Make. What Can We Do? An Open Door Church, p. 49.*

Earth and Space Systems

Daily and Seasonal Cycles

In observing their environment, students become aware of changes that take place in it, including changes in physical factors such as temperature, wind, and light, and changes in plants and animals. Through observation and investigation, students will learn that changes often occur in cycles, including the relatively short cycle of day and night and the longer cycle of the seasons. Recognizing these cyclical patterns prepare students to discover relationships among events in their environment, and between the environment and themselves.

The Ontario Curriculum, Science and Technology. Grades 1-8. 1998.

A Catholic Perspective

All of Creation is God's gift to us. As spiritual persons we need to slow down and take time to observe and wonder at the greatness of God's creation. In addition to observing and seeing with our eyes, we need to see with our hearts and rejoice and give thanks for the great wonders of creation. Prayers of gratitude and praise are a specific way to express our thanks to God. As students grow in awareness of the amazing cycles of nature, a prayerful response can help to deepen the spiritual growth of the student.

Focus:

Deepen awareness of the changes that occur in daily and seasonal cycles

Concept:

Describe changes in the characteristics and behaviour of living things that occur on a daily basis and in seasonal cycles.

**Grade One
Earth and Space Systems
Daily and Seasonal Cycles**

**Relating Science and Technology to the World
Outside the School:**

Gospel Values

- Describe changes in the characteristics and behaviour of living things that occur on a daily basis and in seasonal cycles.
- Describe ways in which people modify their behaviour to adapt to changes in the seasonal cycles

- † Worship
- † Environmental Impact
- † Wonder and awe
- † Curiosity



Focus Concepts

Sample Demonstrations

- † Describe changes in characteristics and behaviour of living things that occur on a daily basis and seasonal cycles
- † Acknowledge God's plan of creation that occurs on a daily basis and seasonal cycles
- † Praise and worship for the daily or seasonal changes



- † 2 way diorama that depicts the changes in nature or in animal behaviour that occur in two different seasons e.g. winter and summer or spring and fall.
- † 4 way diorama that depicts the 4 seasons and the changes from season to season
- † Class big book of Prayers (e.g. bedtime, thanks for a particular season e.g. summer)

RESOURCES

Additional Resources:

- † *20 Prayer Lessons for Children, #6 Jars of Water*
- † *Earth Child- Chapter1 The Circle of Day and Night*
- † *Earth Child- Chapter1 Earth Celebrations- The Four Seasons*

Fully Alive: Family Life

- † Theme 3: Topic 4 -A Gift of Love
- † Theme 5: Topic 1 -The World is an exciting place to be.

Religious Education Program:

We Belong To God

- † Unit 10 - Theme 29:
Remembering and Praising God for Creation

Life Systems

Growth and Changes in Animals

"The study of animals in grade two focuses on patterns of growth and change. Since children are interested in the changes that take place in different types of animals, observing these changes can be a powerful learning experience for them. In their exploration of growth, students will also compare patterns of growth in different animals with their own growth, and they will learn about the conditions needed to support health development in an animal."

The Ontario Curriculum. Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

Most children are fond of animals and have a natural curiosity about them. Some students may have their own pet, a cat, dog, rabbit or hamster, while others may have an opportunity to observe animals outside of their homes. During this unit of study, the children should be involved in reflecting upon the mysteries of the natural world and how God has created these marvelous creatures. Children should be guided through a reflection of stewardship of animals and how to care for them, either as pets or animals in their natural habitats. Through the children's contact with animals, they will become aware of growth, change and sometimes loss. These situations should be handled with sensitivity. Teachers should be aware that animal birth is similar to but not parallel with human birth. St. Francis of Assisi is the patron saint of animals and children can be taught of his love for all creation.

Focus:

Care for all Creation

Concepts:

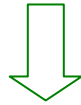
Care and respect for animals.

**Grade Two
Life Systems
Growth and Changes in Animals**

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Describe ways in which humans can help or harm other living things;• Demonstrate awareness of ways of caring for animals properly;• Describe how humans produce food by raising livestock. | <ul style="list-style-type: none">† Stewardship† Interdependence† Common Good† Sacredness of Life |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|



Focus Concepts

Sample Demonstrations

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">† Explore and reflect upon the richness of God's creation† Recognize the life and rhythm of creation (life and death).† Understand the need to care for all living creatures. | | <ul style="list-style-type: none">† Read a story about St. Francis of Assisi and dramatize his care of animals.† Create a chart describing how to care for a pet.† Conduct a short research assignment on an endangered animal.† Create a collage showing the variety of foods we get from livestock. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

RESOURCES

Religious Education Program:

We Belong To The Lord Jesus

- † Unit 6: Theme 16 - Recognize the earth as God's gift to all.
- † Unit 6: Theme 17 - Appreciation the gifts of the earth.

Fully Alive: Family Life

Theme 5: Living in the World

- The world is a good place
- Gifts of the earth
- We savour the gifts from the earth
- To appreciate the gifts of the earth
- Prayers of thanks and praise for the gifts of the earth

Additional Resources:

- † *20 more Prayer Lessons for Children, # 35 Creation*
- † *The Tenth Good Thing About Barney*
- † *It Must Hurt A Lot*
- † *Love You Forever*

Matter and Materials

Properties of Liquids and Solids

"When students examine materials in the world around them, they become aware of a wide variety of similarities and differences in the properties of those materials - for example, the way they look, feel, sound, or change. In Grade 2, students will develop their understanding of properties of materials through investigating liquid and solid materials. They will investigate ways in which solids and liquids interact, and will learn that some materials exist in both solid and liquid states. They will also learn that it is important to take into consideration the various properties of solids and liquids when designing and making or building objects for use."

The Ontario Curriculum, Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

As students observe and compare the properties of liquids and solids, the two special signs of Eucharist, the bread and the wine can be experienced as examples of a solid and a liquid. If students have the opportunity to make bread, it is an excellent way for them to see how a variety of materials, some solid, some liquid are combined to make bread. An experience of observing the change of states can be presented by looking at the grape and discussing how it is processed and changed to a liquid when making wine. Jesus chose these two special signs to express his loving presence in the Eucharist.

Focus:

Eucharistic is the sign of bread and wine.

Concept:

Examining the signs of Eucharist, bread and wine, as examples of a solid and a liquid.

Grade Two
Matter and Materials
Properties of Liquids and Solids

Relating Science and Technology to the World Outside the School:

Gospel Values

- Identify and describe ways in which we use our knowledge of liquids and solids in making useful objects and living in our environment.
 - Identify liquids used in the home and describe how they are used.
- † Community
 - † Faith



Focus Concepts

- † The signs of sacraments use everyday objects.
- † Jesus showed love by sharing bread with others.

Sample Demonstrations

- † Enjoy the hands-on experience of bread-making.
- † Read gospel stories of Jesus sharing bread e.g. Matthew 14:13-21
- † Invite a wine-maker or baker to the class to talk about their craft.



RESOURCES

Religious Education Program:

We Belong To The Lord Jesus

- † Unit 7- Theme 20: Do this in memory of me.
- † Unit 8- Theme 22: Give us this day our daily bread.
- † Unit 9- Theme 27: Jesus is our food and drink.

Fully Alive: Family Life

- † Theme 2- Topic 5: Being Friends
- † Theme 5-Topic 2: Gifts of the Earth

Additional Resources:

- † **Science Everywhere: A Catholic Perspective** (Sensational & Whatever You Wear)
- † Celebrating with Science - Unit 2: Bread

Energy and ControlEnergy From Wind and Moving Water

"The study of wind and water as sources of energy enables students to expand their understanding of different forms of energy and how they can be used. Through exploration and experimentation, students will actively investigate these two forms of energy. By designing their own wind- and water-propelled devices, students will learn to identify factors that affect the motion and control of such devices. The study of wind and moving water should also help students better understand the concept of energy. Integrating this aspect of the course with the Earth and Space Systems expectations for Grade 2 ("Air and Water in the Environment") will help students recognize the importance of air and water as two invaluable resources on earth."

The Ontario Curriculum. Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

The action of the Holy Spirit is like the power and strength of the wind that fills us and helps us do good deeds. This energy source of God's presence is totally a gift and invites us to allow God to work in us and through us. Moving water as a source of energy also has strong Biblical images of the "living waters" of God flowing in us. The image from the song "Peace is flowing like a river" is a powerful image of letting peace flow among us and strengthening the presence of peacemaking. The waters of baptism are an important sign of God's love and action in our lives.

Focus:

Wind and water as sources of energy in both the concrete and spiritual sense.

Concept:

Experiencing the force of wind and moving water.

Grade Two
Energy and Control
Energy from Wind and Moving Water

Relating Science and Technology to the World Outside the School:

Gospel Values

- Identify wind and moving water as renewable sources of energy and determine the advantages and disadvantages of using them.

- † Stewardship
- † Lifestyle
- † Responsibility
- † Conservation
- † Faith



Focus Concepts	Sample Demonstrations
† Some Gifts of the Earth are renewable such as wind and moving water	† List the effects (positive and negative) on people and land when wind & moving water are used to generate energy.
† Holy Spirit is like the power and strength of wind that fills us and helps us to do good	† Listen to the story of the Holy Spirit coming to the apostles (Pentecost) and filling them with the power and energy of God's love. Acts 2: 1-12
† The waters of baptism are an important sign of God's love and action.	† Listen to sounds of wind and create an artistic interpretation in art or movement.

RESOURCES

Religious Education Program:
We Belong To The Lord Jesus

- † Unit 7-Theme 21: Let's Bless these Gifts
- † Unit 7-Theme 21: May the Holy Spirit come upon these gifts.
- † to explore the action of the Spirit on the gifts of bread and wine
- † to explore the action of the Spirit upon the faith community

Fully Alive: Family Life

- † Topic 2: Gifts of the Earth
- † Identify some of the many natural resources of the earth

Additional Resources:

- † Earth Child (see bibliography)
- † "Peace is Flowing like a River" Song. Carey Landry. *Young Peoples' Glory and Praise*
- † See *Science Everywhere: A Catholic Perspective* (Start Up & Celebrating Science)

Structures and Mechanisms

Movement

The study of moving things helps children develop a sense of space, as well as an understanding of the relationship between stationary and moving objects, including themselves. Through observation and the use of specific vocabulary, students will develop the ability to describe the position and motion of objects. In exploring motion, students will investigate mechanisms, such as hinges, inclined planes, and wheels and axles, and identify the simple machine(s) within them, such as lever, wedge, and wheel. They will investigate how mechanisms that consist of one or more simple machines can change the type and the direction of the movement of an object; for example, a hinge (mechanism) makes use of a lever (simple machine) to move a door backwards and forwards.

The Ontario Curriculum. Science and Technology. Grades 1-8. 1998.

A Catholic Perspective

One way of talking about our bodies is to exclaim, "What an amazing machine we are!" To experience an appreciation of how amazing our bodies are, we can begin by moving fingers and toes, then hands and feet, then arms and legs. This simple discovery can lead us to a sense of praise and thanksgiving to God for the amazing creation each of us is. Planned creative movement of our bodies can accompany songs and prayers to add to our expressions of praise to God. Many of the songs from the Grade two religion program suggest movements to further express the meaning of the song. Discover how certain movements of our bodies can express praise and thanksgiving to God. Please refer to the resource page where there are songs that include movement from *We Belong to the Lord Jesus* are listed.

Focus:

Praise and thanksgiving for the creation of our bodies.

Concept:

Discover that the movement of our bodies provides the foundation for movement of objects.

Earth and Space Systems**Air and Water in the Environment**

Air and water form a major part of the physical environment and are essential materials for life, yet our awareness of them is often limited largely because we recognize them only in their most obvious and observable forms (e.g., water in lakes and rivers, rain, wind). Through investigations, students will learn about the characteristics of air and the various forms of water in the environment, about changes in and interactions between air and water when they are heated and cooled, and about their movement through the environment. In the process, students will discover the many ways in which air and water contribute to the health and survival of living things, including ourselves.

- *The Ontario Curriculum. Science and Technology. Grades 1-8. 1998.*

A Catholic Perspective

In deepening and broadening an awareness of the many forms of water in the environment a connection can be made to the meaning of Eucharist. It is through faith that we believe God's loving action truly brings forth the living presence of Jesus in the simple signs of bread and wine. This is a very profound concept and can be known only through our faith experience. The reality that water can be changed to exist as either solid, liquid or vapour can be something like the action of God which brings the living presence of Jesus to the gift of bread and wine. The various states of water are still H₂O but appear different. The bread and wine look the same, but have been changed to the living presence of Jesus.

Focus:

The many forms of water in the environment can be compared to the meaning of Eucharist.

Concept:

Look at the changes of the states of water and air.

Grade Two
Earth and Space Systems
Air and Water in the Environment

Relating Science and Technology to the World Outside the School:

Gospel Values

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Recognize that clean water is an increasingly scarce resource and should be used wisely • Describe the different uses of water and identify some that are essential for maintaining our health | <ul style="list-style-type: none"> † Sacrament † Spirituality † Conservation/Preservation † Environmental Impact |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|



Focus Concepts

Sample Demonstrations

- † Water is a precious gift of the Earth
- † Water as life giving (waters of baptism)



- † conservation practices i.e. walk around the school and home looking for water waste (e.g. running water while brushing teeth)
- † looking at water in different states (ice, liquid, gas) as it exists in different parts of the world

RESOURCES

Religious Education Program:

We Belong To The Lord Jesus

- † Unit 9: Theme 27- Jesus is our food and drink
- † Unit 6: Theme 16: We savour the Gifts from the Earth
- † Unit 6: Theme 17: We celebrate the work of human hands

Fully Alive: Family Life

- † Theme 3: Topic 4- A Gift of Love
- † Theme 5: Topic 1- The World is an exciting place to be.

Additional Resources:

- † *20 Prayer Lessons for Children, #6 Jars of Water*
- † *Earth Child- Chapter 5*
Walt & Wild

Life Systems**Growth and Changes in Plants**

"The study of plants in Grade three focuses on the characteristics and requirements of plants and their patterns of growth. Students will observe and investigate a wide variety of local plants, from trees to mosses, in their natural environment. They will also learn about the importance of plants not only as sources of food and shelter for people and animals, but as suppliers of much of the world's oxygen."

The Ontario Curriculum. Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

Students may not be aware of the central importance of plants in Creation. Plant life supports all other life on earth, either as a source of food and oxygen, or as a habitat, and therefore should also be cared for and protected, as are animals. Use the *Parable of the Mustard Seed* (Matthew 13:31-32 or Mark 4:30-32 or Luke 13:18-19) and talk about the message Jesus was teaching. Students may wish to create a "Prayer Garden", "Peace Garden" or a "Mary Garden", always keeping in mind our connection to Jesus and praying to Him. Teachers may also want to focus attention on the plight of farmers and their enormous commitment to producing food for all of us. Issues concerning hunger, both locally and globally, may be explored.

Focus:

Care for all Creation

Concept:

Plants support all creation on earth.

**Grade Three
Life Systems
Growth and Changes in Plants**

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- Describe ways in which humans can protect natural areas to maintain native plant species
- Describe ways in which plants and animals depend on each other (e.g. plants provide food for energy)
- Compare the requirements of some plants and animals and identify the requirements that are common to all living things (e.g. the need for water and minerals).
- Demonstrate awareness of ways of caring for plants properly.

- † Interdependence
- † Stewardship
- † Common good



Focus Concepts

Sample Demonstrations

- † Recognize the necessity of all creation to have what is needed to live and grow
- † Grow in awareness and take practical responsibility to care for creation
- † Praise and thank God for all creation
- † Appreciate the ever-changing beauty of God's creation
- † Understand the importance of people in creation.



- † Create a mini-garden e.g. Japanese and prepare for its proper care and use.
- † Create seasonal centers and highlight the uniqueness of each season.
- † Discuss the proper use of nature by humans
- † Identify what students can do to help keep the balance of creation and make the world a better place to live

Religious Education Program:

In the Spirit We Belong

- † Unit 7-Theme 9: The doctrine of Creation
- † Unit 7-Theme 9: The work of the Holy Spirit in Creation
- † Unit 7-Theme 10: Celebration of Creation
- † Unit 9:-Theme 25: Spring as a "sacrament" of God's power to give life
- † Unit 9-Theme 27: New creation in the Holy Spirit

RESOURCES

Additional Resources:

- † *20 More Prayer Lessons for Children, #38 Spontaneous Prayer, A Walk in the Woods.*
- † *Celebrating our Environment- Unit 3: From Seed to Tree, Unit 13: Treasures in the Rainforest*

Matter and Materials**Magnetic and Charged Materials**

"In previous grades, students have manipulated, observed, and investigated a wide variety of materials. Now, they will focus on materials that are magnetic or those that can hold an electric charge. Students will investigate the ways in which different materials affect magnetic strength and electric charge. They will learn that every magnet has two poles, and that the strength of a magnet depends on the types and combinations of the various materials from which it is made. Students will also describe their observations of static electricity and the conditions that affect it. Through these investigations, students will increase their knowledge about the properties of materials that make them useful for specific purposes."

The Ontario Curriculum. Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

Some materials are magnetic and have within them a power to move or attract objects. We can compare this power of the magnet to the action of the Holy Spirit within each of us. The action of the Holy Spirit brings us together in community and in service to one another. It is the power of the Holy Spirit that holds a community together. Individual members of the community can inspire others to do good actions and care for each other. It is this inner action of the Holy Spirit like the pull of a magnet that can help us to see the good example of others and to try to live our lives as friends of Jesus.

Focus:

The action of the Holy Spirit within us.

Concept:

Service to one another is a sign of the Spirit's action within us.

Grade Three
Matter and Materials
Magnetic and Charged Materials

Relating Science and Technology to the World Outside the School:

Gospel Values

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ▪ Students learn to see connections between science and technology and the broader social, economic context | <ul style="list-style-type: none"> † Transformation/Conversion † Community † Service to others |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|



Focus Concepts

Sample Demonstrations

- † Exploring what binds us together in community
- † Appreciating the Holy Spirit who gathers and inspires us
- † Appreciating how we are able to reach out and care for others



- † Gather to celebrate in prayer or Eucharist
- † Create a poster that shows examples of caring for others
- † Share gospel stories that talk about the action of the spirit in community e.g. Acts 2:1-4, 42-47

RESOURCES

Religious Education Program:

In the Spirit We Belong

- † Unit 2- Theme 4: The Holy Spirit is at work among us.
- † Unit 10 - Theme 29: Spirit filled, we reach out to serve

Fully Alive: Family Life

- † Theme 2- Topic 6: Being part of the group
- † Theme 4- Topic 3: We get help with our decisions.

Additional Resources:

- † Science Everywhere: A Catholic Perspective (Start Up & Celebrating Science)

Energy and Control

Forces and Movement

"The study of forces introduces students to two types of forces and their effects. The first type involves direct interaction - pushes and pulls between surfaces that are in direct contact. The second type, which includes magnetic and static electric forces, involves interaction at a distance, and students should be aware that these forces also exist. In exploring the effects of forces, students will learn about the ways in which forces create movement in objects - for example, that some movement results from an imbalance between forces, some from the release of stored energy, as with the release of a wound spring. In addition, the study of forces will enable students to expand their understanding of control by designing and making devices that use a form of energy and can apply a force to another object. These activities will help students begin to recognize that all systems share certain characteristics - for example, they are made of component parts that work together to perform a specific task."

The Ontario Curriculum. Science & Technology. Grades 1-8. 1998.

A Catholic Perspective

We can relate this topic of types of forces and their effects to the force of love. Jesus can bring to our lives when we grow in friendship with him and allow our lives to be directed and affected by him. As we continue our lifelong journey in faith, we learn from Jesus' teachings and example how to be a faithful follower. It is when we allow the spirit-presence of Jesus to influence our choices and actions that Jesus' force truly makes a difference in our lives. It is the power of the Holy Spirit within us that causes this action of faith to take place.

Focus:

Workings of the Holy Spirit bring about the power of Jesus' presence.

Concept:

Relating the forces of energy to the action of Jesus working within us.

**Grade Three
Energy and Control
Forces and Movement**

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Identify parts of systems used in everyday life, and explain how the parts work together to perform a specific function. | <ul style="list-style-type: none"> † Spirituality † Growth in Faith |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|



Focus Concepts	Sample Demonstrations
<ul style="list-style-type: none"> † God is a force in our lives. † Reflect on the action of the Holy Spirit which helps us follow Jesus' teachings † Reconciliation 	<ul style="list-style-type: none"> † Read and talk about the gospel stories of Jesus' life to learn how to be a follower of Jesus. Luke 10:25-37 (The Good Samaritan). † Role play - Explore examples of forgiveness (Unit 8, Theme 23). † Create a story or comic strip related to forgiveness (Unit 8, Theme 23) e.g., if you found a toy in the playground, you would...

RESOURCES

**Religious Education Program:
In The Spirit We Belong**

- † Unit 7-Theme 19: The Holy Spirit fills the whole earth.
- † Unit 8- Theme 22 The Holy Spirit reconciles people.
- † Unit 9-Theme 27: The Holy Spirit gives new life.
- † Unit 10: Theme 28 - We are the Church.

Fully Alive: Family Life

- † Theme 2, Topic 2- Family Love is Open to Others
- † Theme 2, Topic 5 - Challenges of Friendship
- † Theme 4, Topic 2 - Appreciate that decisions need to be made carefully

Additional Resources:

- † *Celebrating with Science. #18 Energy*

Structures and Mechanisms

Stability

"Students will develop their understanding of the concept of stability in structures and the function of specific mechanisms. They will design and build structures that are rigid and strong, and will incorporate mechanisms in these structures. Students will also gain some understanding of the concept of balance, which is a necessary foundation for the later study of equilibrium."

- *The Ontario Curriculum. Science and Technology, Grades 1-8. 1998.*

A Catholic Perspective

On occasion, Jesus talked about the importance of building on something that has strength and stability. Jesus spoke of the wise man who built his house on rock so it would be strong and sturdy (Matt 7:21-27, Luke 6: 47-49). Jesus emphasized the importance of stability and strength when he proclaimed Peter to be like a strong rock on which he would build his Church (Matt 16:13-19) and nothing would destroy it. Like the physical strength of buildings, we need a spiritual strength inside of us to be faithful followers of Jesus and choose to do the right actions that help others.

Focus:

Compare how the presence of the Holy Spirit provides inner strength for us just as a well-built structure with a good inner foundation will have stability.

Concept:

Create a stable structure.

**Grade Three
Structures and Mechanisms
Stability**

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Design and make a stable structure that will support a given mass and perform a specific function - see examples below • Use appropriate materials to strengthen and stabilize what they have designed. | <ul style="list-style-type: none"> † Spirituality † Creation † Design † Quality of life |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|



Focus Concepts

Sample Demonstrations

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> † Structures serve as meeting places for faith communities † Look at structures in a church (e.g., alter, crucifix, stable, crèche, steeple, arches, tabernacle) | <ul style="list-style-type: none"> † Build a tent (Unit 1, theme 1 as a gathering place). † Build any one of the listed structures. † Create a diorama that displays the Scripture reading of Matthew 7:21-27 or Luke 6:47-49. |
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RESOURCES

Religious Education Program:

In the Spirit We Belong

- † Unit 1: Theme 2- A Special Gathering Place: The Meeting Tent
- † Unit 1: Theme 2 - Dreaming with God
- † Unit 2: Theme 4 - The Holy Spirit is at work among us.
- † Unit 10: Theme 28 - We are the Church and Come to the church as God's gathering

Fully Alive: Family Life

- † Theme 4: Growing in Commitment
- † Topic 2: Learning about Decisions
- † Topic 3: We Get Help With Our Decisions

Additional Resources:

- † *Science Everywhere Catholic Perspective*
- † *Celebrating with Science: Unit 5- Rocks and Stones*
- † *Celebrating Our Environment: Unit 24- Rock of Strength*

Earth and Space Systems

Soils in the Environment

"As children soon discover, soil is not just dirt but a rich source of life and nourishment for many organisms, including humans. Many different kinds of animals and plants live in soil, which provides a base for gardens, forests, fields, and farms. By examining soils, students will discover that soils are made up of living things and different earth materials. Different kinds of soil have different characteristics and combinations of materials, which determine their animal and plant populations as well as their suitability for particular uses. Students' investigations in this strand will involve manipulation as well as observation and other methods of inquiry."

- *The Ontario Curriculum. Science and Technology, Grades 1-8. 1998.*

A Catholic Perspective

Just as soil is a rich source of life and nourishment, so too, we who are Church are an important source of life for each other. The variety of components that make up a sample of soil can be compared to the diversity of peoples who make up who we are as Church. Each one of us brings our own uniqueness and giftedness. Our Church is most alive when each member contributes the diversity of gifts with which she/he is endowed. In Paul's writings to the Corinthians, he reminds us of the variety of gifts that make up the People of God who are Church (1 Corinthians 12:4-11). It is important to acknowledge and celebrate this wonderful diversity.

Focus:

Soil is a rich source of life and nourishment, so too, we who are Church, are an important source of life for each other.

Concept:

Soil is a rich source of nourishment for life.

**Grade Three
Earth and Space Systems
Soils in the Environment**

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- | | |
|-------------------------------------------------------------------------------------------------|-----------------------------|
| • Demonstrate awareness of the importance of recycling organic materials (i.e. composting). | † Ecology |
| • Describe how the use of different soils affects the growth of plants. | † Conservation/Preservation |
| • Identify the living things found in the soil and become aware of their importance e.g. worms. | † Environmental Impact |
| | † Responsibility |
| | † Diversity of Gifts |



Focus Concepts

Sample Demonstrations

- † Care and preservation of soil as a gift from God which bears and yields fruit (Psalm 65- Thanksgiving for the Earth's bounty)
- † Using soil for planting
- † Parable of the Sower (Mark 4:3-9, 14-20).



- † Mobile which displays the "fruits" of the soil along with items which may negatively affect the quality of the soil
- † Build a mini composter or a class composter
- † Plant various flowers, grasses, vegetables (beans, carrots, watercress, mustard seeds).
- † Read the parable of the sower (Matthew 13:18-23) and create action movements for the different types of soils.
- † Read I Corinthians 12:4-11 and create a class collage including one "gift" of each student.

RESOURCES

**Religious Education Program:
In the Spirit We Belong**

- † Unit 7: Theme 21- The Earth shall yield its fruit.
- † Unit 1: Theme 2- Gathering all people into one family
- † Unit 10: Theme 28 - We are the Church and Theme 30- We celebrate we are Church
- † Song: Song of Creation #18

Fully Alive: Family Life

- † Theme 5: Topic 1 - The World is full of wonderful people.

Additional Resources:

- † *See Science Everywhere Catholic Perspective*
- † *Earth Child - Making Dirt p.112-113.*

Life Systems

Habitats and Communities

"Students in grade four will be familiar with the basic needs of plants and animals, and will begin to explore and compare ways in which communities of plants and animals satisfy their needs in specific habitats. In their investigations, they will also study some of the factors that affect various habitats, including changes that occur naturally and changes brought about by people."

- *The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.*

A Catholic Perspective

The Grade 4 Religion program centres on Jesus and Jesus' ministry of forming the early Christian communities. As Jesus spoke to the crowds and taught his apostles and disciples, he was very conscious of nature, of the plants and animals of the land where he lived. In his teachings, many times, Jesus used stories to help people understand. Jesus used the image of sheep and the shepherd to talk about God's great love and about forgiveness. He talked about the tiny mustard seed that grows into a large bush and provides a place for the birds to live. To understand better some of the stories Jesus told, it would be a valuable learning experience to identify the plants and animals in the land where Jesus lived and compare them with plants and animals we know. (Resource: *The Land Where Jesus Lived - O.E.C.T.A.*) The theme of the tree stump is prominent in the grade 4 program, *Come and See*. Students could use the tree as a habitat for certain species of animals.

Focus:

Care for all creation

Concept:

Awareness of the habitats of plants and animals and the diversity of habitats on Earth.

**Grade 4
Life Systems**

Habitats and Communities

**Relating Science and Technology to the
World Outside the School:**

Gospel Values

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Describe ways in which humans are dependent on plants and animals• Describe ways in which humans can affect the natural world• Show the effects on plants and animals of the loss of their natural habitat• Investigate ways in which the extinction of a plant or animal species affects the rest of the natural community and humans | <ul style="list-style-type: none">† Stewardship† Conservation/Preservation† Ecology† Responsibility |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|



Focus Concepts

Sample Demonstrations

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">† Describe ways in which humans can affect positive changes in the natural world† Investigate ways in which the extinction of a plant or animal species affects the rest of the natural community and humans† Recognize that animals and plants live in specific habitats because they are dependent on those habitats and have adapted to them | <ul style="list-style-type: none">† Start up an "Environment Club" in your school.† Have a "litterless" lunch day.† Create food chains to demonstrate the loss of plant or animal life and describe the consequences on the remaining species (e.g. decline in frog population results in higher number of mosquitoes).† Compare the natural habitats in Canada to those in Israel where Jesus grew up. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



RESOURCES

**Religious Education Program:
Come and See**

- † Unit 1: Theme 2 - The Church hands on the story of Jesus
- † Unit 3: Theme 7-9 - Jesus tells us about the reign of God
- † Unit 5: Theme 15 - To situate Jesus in his own land, among his own people.
- † Scripture passages:
 - † Matthew 13: 31-32 (Mustard Seed)
 - † Mark 4:1-9 (Sower)
 - † Mark 4:26-29 (Seed Growing)
 - † John 10: 1-15 (Good Shepherd)
 - † Psalm 23: Good Shepherd

Fully Alive: Family Life

- † Theme 5: Living in the World
Topic 2 - Caring for the World

Additional Resources:

- † *The Land Where Jesus Lived (binder and video) - O.E.C.T.A.*
- † *Celebrating our Environment - #6 Green, #13 Treasures of the Rainforests, #22 Hunters and Searchers.*
- † *Loving Our Neighbour, The Earth - Lesson 9: Consider the Lilies*
- † *Worlds of Difference - Select a Creation Story to read aloud.*

Matter and Materials & Energy and Control**Light**

"As they explore the properties of sound and light (see the Energy and Control strand for Grade 4), students will also encounter a wide variety of materials that transmit, reflect, or absorb energy. By focusing their investigations on the way these materials affect or are affected by sound and light, students will deepen their knowledge of the types of properties materials can have. They will also learn more about how the different properties of materials can help them to design products that are safe, useful, and creative. Building on their previous learning about different forms of energy and their sources, students now begin to examine in more depth two forms of energy they encounter on a daily basis: light and sound. Students will become familiar with the properties of light by investigating and observing how light interacts with various objects in the environment. From these observations, students will come to realize that light travels in a straight line, and they will begin to use this knowledge in constructing simple optical devices."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

As students explore the properties of light, it would be appropriate to connect with the image of Jesus as Light of the World. Jesus frequently used the image of light when he spoke of himself, "I am the light of the world." In units 4 and 5 of the Religion program, this image of light is used during the Advent/Christmas time to teach us how Jesus is the light that breaks through the darkness and brings hope and love into our world. Jesus also challenges us to let our light shine. We let our light shine when we reflect the goodness of Jesus that is within each of us as baptized persons. The saints are seen as clear examples of persons who have let their light shine before others. Jesus reminds us not to hide our light but to put it on a lampstand for others to see.

Focus:

Recognize the religious symbolism of light and darkness.

Concept:

Let the light of Jesus shine through us.

Grade 4
Matter and Material and Energy and Control
Light

Relating Science and Technology to the World Outside the School:	Gospel Values
<ul style="list-style-type: none"> • Identify different uses of light at home, at school, at church and in the community and explain how their brightness and colour are related to their purpose. • Describe the effect on the quality of life if light could not be used as a form of energy. 	<ul style="list-style-type: none"> † Discipleship † Gospel witness



Focus Concepts	Sample Demonstrations
<ul style="list-style-type: none"> † Recognize the symbolism of light and darkness † Understand that hope brings light into the darkness in people's lives † Recognize Advent as a season of waiting in hope † Discover how John the Baptist bears witness to the light 	<ul style="list-style-type: none"> † Hear and reflect upon the story of Chief Dan George, a light in the darkness and a symbol of hope for his people. † Gather around the Advent Wreath to experience the symbols of light and hope in weekly ritual. † Read John 1:6-9 which tells how John the Baptist bore witness to the light who was Jesus and create an Advent card using passages from this reading. † Read the Scripture passages on Light. Write a letter to a friend explaining the message of the passage. Share this letter at home.

RESOURCES

Religious Education Program:

Come and See

- † Unit 4: Themes 10-12 - A light shines in the darkness
- † Unit 5: Theme 13-14 - Sharing Christmas "light" experiences
- † Songs: #12 Children of the Light and #16 Come and See.
- † Scripture passages:
- † John 1:1-5 (Jesus is the light)
- † 1 John 1:5-10, 2: 7-11 (Letting your light shine)
- † Luke 11:33-36 (Letting your light shine)
- † Matthew 6:22-23 (Letting your light shine)

Fully Alive: Family Life

- † Theme 2: Topic 2 - Families show love
- † Theme 4: Topic 3 - Keeping Commitments

Additional Resources:

- † *Celebrating with Science* : Theme 20-The Gift of Life, Theme 21- Light and Dark, Theme 22- Light for Life.
- † *Loving our Neighbour, the Earth*: Lesson 19 - Brother Sun (Christmas and Hanukkah)
- † *Celebrating our Environment* - #23 Light through Darkness

Energy and Control and Matter and Materials**Sound**

Building on their previous learning about different forms of energy and their sources, students now begin to examine in more depth two forms of energy they encounter on a daily basis: light and sound. Similarly, through investigations students will learn how sound is caused (by vibrations), how it travels, and how it can be sensed and measured. As well, by exploring the factors that affect the sounds that are produced, students will begin to discover ways in which sound can be controlled. As they explore the properties of sound and light (see the Energy and Control strand for Grade 4), students will also encounter a wide variety of materials that transmit, reflect, or absorb energy. By focusing their investigations on the way these materials affect or are affected by sound and light, students will deepen their knowledge of the types of properties materials can have. They will also learn more about how the different properties of materials can help them to design products that are safe, useful, and creative.

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

The Word of God is another title for the Bible. It is through the Word of God that we learn about the teachings of Jesus. The first followers of Jesus listened as Jesus taught so it was through sound and hearing that the teachings of Jesus were spread among the people. As students investigate various properties of sound, a connection can be made with hearing God's word and living it. In Luke 11:27, Jesus says, "Blessed are those who hear the words and obey it." Jesus often healed the deaf persons so they too could hear about God and God's great love for them. As students design and make musical instruments to further explore how shapes affect sound, they may want to research and design some of the musical instruments that were used during the time Jesus lived. Very often, music was used to express praise to God. It is through our listening to stories of Jesus that we are awakened to the call to "come and follow Jesus".

Focus:

Faith

Concept: It is through hearing the stories of Jesus that we grow in friendship with Jesus.

Grade 4
Energy and Control and Matter and Materials
Sound

Relating Science and Technology to the World Outside the School:

Gospel Values

- Describe the effect on the quality of life if sounds could not be heard.

- † Faith
- † Sacred Scripture
- † Service



Focus Concepts

Sample Demonstrations

- † Understand the meaning and use of parables by Jesus the storyteller
- † Discover how Jesus' parables provide images of the kingdom of God and reveal the joy and compassion of God



- † Enter into parables through creative activities, e.g.: song, story-telling, drama, art
- † Re-enact kingdom stories in oral, written and picture form.
- † Research and design some of the types of musical instruments used during the time of Jesus

RESOURCES

Religious Education Program:
Come and See

- † Unit 1: Theme 2-3 - The Church hands on the story of Jesus- The Bible is the Word of God
- † Unit 3: Jesus tells us about the reign of God
- † Unit 7: Jesus says, "I am the way."
- † Songs: *Good News #4*, *May Your Word #5*, *John Cried Out #13*.
- † Scripture passages:
 - 1 John 1:1-4
 - Mark 7:31-37
 - Matthew 15:29-31

Fully Alive: Family Life

- † Theme 1: Topic 4 We do not grow alone.
- † Theme 3: Topic 3 What makes you you.

Additional Resources:

- † *Celebrating with Science - #6*
- † *Our Finding Out Kit - Hearing*
- † *20 Prayer Lesson for Children - #5 Senses (optional resource)*

Structures and Mechanisms**Pulleys and Gears**

"In previous grades, students will have investigated and built structures using wheels and axles. In Grade 4, they will broaden their understanding by looking at two special kinds of wheels: pulleys and gears. Pulleys are used singly or in combination to move an object from one place to another. Gears can be used in combination to change speed and direction of movement. Students will design and build pulley systems and gear systems, and will explore the advantages of each type of system. They will also continue to refine their understanding of structures, and will incorporate mechanisms in a structure to meet a specific need."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

Catholic Perspective

As students investigate, design and make pulley and gear systems, they learn how motion is transferred from one system to another. These systems make changes in direction, speed and force possible. The Grade 4 program, Come and See, focuses on the theme of invitation to come and learn about Jesus. This theme invites the students to grow in friendship with Jesus so he can help them make changes in their lives so they are more caring, forgiving, and loving to others.

In Unit 3, the students engage in the study of parables. Jesus used the stories of the parables to present ordinary images to bring the message of God's love working in our lives. God's power of love fills us with invitation to do good and we, on our part, make a response. In the parables, Jesus uses images of a coin, shepherd, seeds, a pearl, and many other ordinary objects. Invite the students to consider the power of God's love as the action that takes place similar to the way pulley and gear systems work together. *God's invitation to love is like a pulley and gear when...* Guide the students to see that the action of pulleys and gears that make changes relate to the Spirit of God working within us to make changes toward becoming persons who show love to others.

Focus:

Transformation

Concept:

Relate the action of pulleys and gears to the way the Spirit of God works within us.

Grade 4
Structures and Mechanisms
Pulleys and Gears

Relating Science and Technology to the World Outside the School:

- Design and make pulley systems and gear systems, and investigate how motion is transferred from one system to another
- Describe, using their observations, how rotary motion in one system (e.g., a system of pulleys of different sizes) is transferred to rotary motion in another (e.g., a system of various gears) in the same structure;

Gospel Values

- † Empowerment
- † Lifestyles
- † Common Good
- † Transformation



Focus Concepts

- † To see that the action of pulleys and gears that make changes relate to the Spirit of God working within us to make changes toward becoming persons who show love to others.
- † To recognize that Jesus used images from everyday life to teach us how to live as his followers.

Sample Demonstrations

- † Build a structure using an image from one of the parables or scripture passage, e.g. bed on a pulley system from the story of the paralytic man, Mark 2:1-5. Or, build the table from the Last Supper, John 13:1-11, crèche from the birth of Jesus, Luke 2:1-7



RESOURCES

Religious Education Program:

Come and See

- † Unit 2- Themes 5-6: Come and See- And great crowds followed Jesus.
- † Unit 3-Themes 7-9: Parables are kingdom stories.
- † Unit 6-Jesus reveals the compassion of God.
- † Unit 10- Jesus Spirit is with us.
- † Songs: Good News #4, Come and See #16
- † Scripture passages:
 - See teacher manual *Come and See*, p. 7.

Fully Alive: Family Life

- † Theme 1-Topic 5 Our Actions affect others
- † Theme 2: Topic 2 Families Show Love, Topic 4 We Share Responsibilities
- † Theme 4: Topic 2- Making Commitments, Topic 3 - Keeping Commitments
- † Theme 5: topic 3- Building God's world

Additional Resources:

- † *20 More Prayer Lessons* - Lesson 36: Growth Chart.
- † *20 More Prayer Lessons* - Lesson 37: Symbols.
- † *Loving Our Neighbour, The Earth:* Lesson 6 - Caring for One Another

Earth and Space Systems**Rocks, Minerals and Erosion**

The study of rocks and minerals introduces students to geology. By examining different types of rocks and minerals found in the earth's crust, students will learn about their characteristics and properties. They will also discover that rocks and minerals are useful for many things and that their characteristics help to determine their use. Through an examination of the processes of erosion, transportation, and deposition, students will develop an understanding of the changing landscape and of the ways in which wind, water, and ice reshape it. The examination of these processes will lead to an exploration of the ways in which humans can both prevent changes to the landscape and adapt to these changes.

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

We are all called to a commitment of true stewardship when it comes to protecting the gifts of our Earth. A natural evolution of change occurs to the landscape through the working of nature. We are responsible for the human changes that are made and the impact these changes have on the landscape. One of the challenges we need to consider is the long-term impact on the environment of our human changes or of natural erosion. In fast growing and changing communities, students can learn by comparing how the landscape has changed over the past few years and listing the positive and negative effects. Each of us must hold sacred the responsibility to treasure our gift the Earth. What can we do, what do we need to do to hold true to our commitment of stewardship?

Focus:

Stewardship

Concept:

Identifying examples of how changes to the landscape occur.

Grade 4
Earth and Space Systems
Rocks, Minerals and Erosion

Relating Science and Technology to the World Outside the School:

- Determine positive and negative effects of human alteration of the landscape.
- Conduct investigations of the outdoor environment in a responsible way and with respect for the environment.

Gospel Values

- † Stewardship
- † Responsibility



Focus Concepts

- † Determine positive and negative effects of human alteration of the landscape.
- † Identify ways in which soil erosion can be controlled or minimized.
- † Create a plan for reducing erosion of soil in a local field or plot.



Sample Demonstrations

- † Plan to plant a tree, mulch an exposed area of the schoolyard, plant flowers, etc. to reduce erosion.
- † Create a list of actions describing what causes erosion to the landscape and possible solutions to prevent it.
- † Create a before and after poster of a landscape that has undergone erosion by as a result of one/many factors e.g. clear cutting forests.
- † Compare the natural habitats in Canada to those in Israel where Jesus grew up. Discussion could center around how a landscape becomes a desert and how a desert can be changed.

Fully Alive: Family Life

- † Theme 5: Living in the World - Topic 2: Caring for the World

RESOURCES

Religious Education Program:

You Shall be My Witnesses

- † Unit 6: Jesus reveals the compassion of God.
- † Unit 6: Theme 17 - Jesus goes about doing good.

Additional Resources:

- † *The Land Where Jesus Lived (Binder and Video) - O.E.C.T.A.*
- † *Celebrating the Environment - #24 Rock of Strength*
- † *Celebrating with Science - #14 Rocks and Stones*

Life Systems

Human Organ Systems

"In Grade 5, study of the human body focuses on five major organ systems - the respiratory, circulatory, digestive, excretory, and nervous systems. Using models and simulations, students will learn where the major internal organs are located and will explore the functions and interactions of organs within specific systems. In studying the structure of organs, students will learn that all living tissues are composed of different kinds of cells. Students will also develop an understanding of the importance of proper nutrition and exercise to the healthy functioning of organ systems."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

Teachers may wish to introduce students to *Unit 3: Created Sexual, Male and Female*. The main purpose of the systems listed above is to keep us alive. The purpose of the reproductive system is to create new life. The new life is created in God's image (Isaiah 64: 8) through a loving relationship between a husband and wife. Students will also learn how to care for their bodies through exercise and nutrition and study the impact of certain environmental factors on health, e.g. smoking, smog, poor water quality, etc. This would reinforce that their bodies have a sacredness that should be respected by the way it is cared for. Teachers may also wish to emphasize nourishing the soul through prayer and reflection (food for the journey). This is reinforced by the Religion program, which begins with the first theme expressing the value and dignity of us since, "We are God's work of art."

Focus:

Responsibility to care for one's body (God's work of art).

Concept:

Our bodies are created in the image of God and therefore, are sacred.

Grade 5
Life Systems
Human Organ Systems

Relating Science and Technology to the World Outside the School:

- Identify a balanced diet
- Identify food sources from which people in various societies obtain nutrients
- Explain the importance of daily physical exercise
- Explain how the health of human beings is affected by environmental factors

Gospel Values

- † Sacredness of life
- † Respect for life
- † Responsibility
- † Quality of Life



Focus Concepts

- † Recognize that God has given us the ability to understand how to live a healthy lifestyle and the ability to make positive choices



Sample Demonstrations

- † Make a poster or mobile to demonstrate the aspects of healthy living
- † Create a personal action plan for making changes in lifestyle.
- † Read Psalm 139: 13-15 and write a prayer to thank and praise God for the wonderful gift of our bodies.

RESOURCES

Religious Education Program:

May We Be One

- † Unit 1: Theme 1 - We are God's Work of Art.
- † Unit 7- Theme 19- God saw it was good.
- † Song #1 - A Wondrous Work of Art

Fully Alive: Family Life

- † Theme 3: Topic 1- We are wonderfully made

Additional Resources:

- † 20 More Prayer Lesson - #34 Our Bodies
- † Loving Our Neighbour, The Earth - #7 What did you have for dinner?
- † *Celebrating with Science* - Unit 3 Enjoy Your Body
- † *One World, One Earth* - Using our Bodies

Matter and Materials**Properties of and Changes in Matter**

"In earlier grades, students have learned about the properties (such as strength, flexibility, buoyancy) of various materials and about how such properties determine what the materials are used for. Students now will begin to explore the underlying concept of matter. They will learn about the three states of matter (solid, liquid, gas) and the characteristics of each. They will also explore changes of state, and investigate the difference between physical changes (which are usually reversible) and chemical changes (which may not be reversible). Students will already know about many of these changes from their previous investigations, but now they will begin to apply their knowledge in a systematic way, using inquiry and design processes to solve problems and to choose appropriate materials for the devices they design and make."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

The rock is a central symbol of the grade 5 Religion program, *May We Be One*. In Psalm 18, God is addressed as, "My rock in whom I seek refuge." Our God is the rock who loves us deeply and holds us in our distress. As students explore the characteristics and properties of solids, such as hardness and strength, the image of the rock can connect with this exploration. As students grow in awareness of these qualities, the image of the rock will be better understood. When Peter said to Jesus that he believed that Jesus was the Messiah, the Son of God, Jesus called Simon "cephas". This word means rock and Peter is the rock upon which the community of the Church would be built. It was Peter's faith that became the rock upon which the Church was built. Jesus, at another time, focuses on the strength of a rock when he tells the story of the wise man who builds his house on a rock.

Focus:

Faith in Jesus is the greatest strength of a Catholic believer.

Concept:

Strength and stability of solid substances.

Grade 5
Matter and Materials
Properties of and Changes in Matter

Relating Science and Technology to the World Outside the School:	Gospel Values
<ul style="list-style-type: none"> • Describe how physical and chemical processes change materials found at home and materials used in industry (e.g., cooking, the manufacturing of plastics). • Describe chemical changes that can be caused in a substance, and explain how the changes affect the use and function of the substance. 	<ul style="list-style-type: none"> † Faith † Conversion † Spirituality



Focus Concepts	Sample Demonstrations
<ul style="list-style-type: none"> † Strength and stability of solids † Deep faith centers us on God † The Church grows because of the strength of faith among the People of God 	<ul style="list-style-type: none"> † List qualities of a rock and find stories in the Gospels that demonstrate these qualities in Peter. † Thinking of the image of God as rock, write a prayer focusing on this image.

Religious Education Program:
May We Be One

- † Unit 1: Theme 1- God is Rock
- † Unit 2: Theme 4 - Peter shares his belief in the Lord Jesus
- † Song #7: O God our Rock
- † Scripture passages:
 Matthew 16:13-19 (You are Peter)
 Matthew 7:24-27 (The Wise Man builds on a rock)
 Psalm 18 (God is our rock)

RESOURCES

Fully Alive: Family Life

- † Theme 1: Topic 1 - God's love is forever
- † Theme 4: Topic 2 - Committed people

Additional Resources:

- † *Celebrating with Science:* Unit 15 - Rocks and Stones.
- † Baylor, Byrd. *Everybody Needs a Rock.* New York. Charles Scribner's Sons. 1974
- † *Celebrating Our Environment-* Unit 24: Rock of Strength

Energy and Control

Conservation of Energy

"Modern society places large demands on non-renewable sources of energy. It is essential that the energy from these sources be used wisely. In addition, alternative and renewable sources must be developed if we wish to sustain our present standard of living and ensure adequate energy supplies for future generations. Students need to understand the importance of this problem and learn how to conserve energy. Building on their previous learning about mechanisms and systems, students will deepen their understanding of how devices use energy. By designing, constructing, and operating their own devices, they will learn how energy is transferred from one system to another. In addition, students will expand their knowledge of the different sources of energy and classify them as renewable and non-renewable."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

To respect all of creation and to use wisely the resources of our planet are inherent in the teachings of Jesus. Theme 18 of Unit 6 in May We Be One directly relates to this topic. When we truly celebrate our oneness with creation, we can recognize the place of justice in ecological relationships. Genesis 1:28-31 is a good passage to use for prayer and reflection to help us recognize the privilege and responsibility we have for God's gifts of creation. As suggested in Theme 18, engage the students in activities like an ecological forum which involves the students in identifying examples of caring for our earth and presenting this to other classes and parent groups. In "being Church" it is necessary to take seriously this responsibility of caring for our Earth.

Focus:

Care for creation.

Concepts:

Conservation of the Earth's resources.

Grade 5
Energy and Control
Conservation of Energy

Relating Science and Technology to the World Outside the School:

- Describe how we use different natural resources as sources of energy and evaluate the effect of their use on natural and human-made environments
- Explain ways in which technological innovations affect our use of natural resources and increase or decrease our ability to conserve energy
- Identify ways humans use energy, evaluate the economic and environmental costs of each, and describe ways to avoid wasting energy



Gospel Values

- † Stewardship
- † Conservation/Preservation
- † Ecology
- † Responsibility

Focus Concepts

- † Demonstrate ways to conserve energy.
- † Demonstrate an understanding of how electricity and other energy sources make our lives easier in the Western world.
- † Research one form of an alternative, renewable energy source i.e. wind power.



Sample Demonstrations

- † Conduct an energy audit at home and/or school and list ways to save energy.
- † Imagine you are living in a place where electricity is not available. List as many examples as possible of how your life would be different e.g. make a fire to boil water to cook a meal.

RESOURCES

Religious Education Program:

May We Be One

- † Unit 6 Theme18: Let justice flow like water

- † Unit 7: The Church Reconciles Theme 19 To see creation as God's covenant and human stewardship of the Earth

Fully Alive: Family Life

- † Theme 5: Topic 3 Sharing resources and acknowledging interdependence

Additional Resources:

- † *Celebrating with Science - #18 Energy*
- † *Loving Our Neighbour the Earth - Lesson 14 Abraham planted a tree*
- † *Celebrating Our Environment - Unit 6 Green*

Structures and Mechanisms

Forces Acting on Structures and Mechanisms

"As students continue to design and build mechanical devices and structures, they develop a more sophisticated understanding of forces. Students in Grade 5 will identify the forces acting on and within structures, and will give simple quantitative descriptions of these forces. They will focus on ways of making mechanisms accomplish specific tasks with less effort."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

As students design and build mechanical devices and structures, they will better understand the connection between different forces and how they affect different loads. In our journey and growth in faith, we can be a force to do good or to do harm. Obviously, the teachings of Jesus invite us again and again to be a force for good. Jesus knows this is not always easy to do and he promises to be with us and to help us. In the scripture passage, Matthew 11:28-30, Jesus says to us, "Come to me, all you that are weary and are carrying a heavy load, and I will give you rest." In May You Be One, the students are challenged and invited to be forces for good in carrying out their responsibilities related to the demands of justice issues. Through experiencing the rites and gestures of reconciliation, the student can grow in a deeper understanding of the meaning of reconciliation. Forgiving others and asking for forgiveness are powerful examples of forces for good. Witnessing to the teachings of Jesus in our everyday lives are ways in which we can be forces of good each day.

Focus:

Witness

Concept:

Finding ways to be forces of good in our everyday lives.

Grade 5
Structures and Mechanisms
Forces Acting On Structures

Relating Science and Technology to the World Outside the School:

- Demonstrate an understanding of the effect of forces acting on different structures and mechanisms.

Gospel Values

- † Witness
- † Common Good
- † Transformation/Conversion



Focus Concepts

- † Witnessing to the teachings of Jesus in our everyday lives are ways in which we can be forces of good each day.
- † Recognizing the "bridge" as a metaphor for the bonds of friendship.



Sample Demonstrations

- † Create a mobile using FORCE as the acrostic device.
- † When a "force for good" action has taken place, students record it and place it in a box.
- † Read "Bridge to Terabithia" (read-aloud or individual reading).
- † Design a prayer card with the passage from Matthew 11:28-30 and put it in a place to remind us of Jesus' promise to help us when we try to be forces for good.

RESOURCES

Religious Education Program:

May We Be One

- † Unit 2: Theme 6 - To see the Church as sacrament of Christ's action in the world.
- † Unit 6: Theme 16-18 - The Church acts justly.
- † Unit 7: Theme 19-21 - The Church reconciles.
- † Unit 10: Themes 28-30 - The Church witnesses.
- † Songs: #2 Speak Lord, #4 May We Be One, #12 People of Peace, #17 Go Out Together.

Fully Alive: Family Life

- † Theme 1: Topic 5 - We are connected.
- † Theme 4: Topic 1 - Learning to be responsible.
- † Theme 5: Topic 3 - Signs of a good community.

Additional Resources:

- † *Celebrating Animals* - Unit 23
- † *Celebrating Animals* - Unit 12
- † *20 Prayer Lessons for Children* - Lesson 14: Works of Mercy
- † *Celebrating our Environment* - Unit 17: Have you seen Monsters?, Unit 26: The World Around Us.

Earth and Space Systems**Weather**

Weather, the study of which is called meteorology, is an important aspect of daily life. Students will learn that daily weather conditions are not the result of random occurrences, but are, rather, part of larger climatic systems and patterns that can be predicted both on a short-term and on a seasonal basis. Students will study various aspects of weather (temperature, wind speed, cloud formation, precipitation, atmospheric pressure), and examine the role they play in determining weather conditions.

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

We depend on the climatic systems and patterns that affect our weather. Our homes, lifestyles and food are adapted to our local climate. Weather patterns at times can produce dramatic changes. Too much rain causes flooding, while little or no rain, causes drought conditions. Powerful storms can leave behind extensive damage and destruction. As Church, we are called to reach out with the kindness of God. We have a social justice responsibility to help and care for persons in need. Discuss possible ways the students can respond in the event of a climate disaster. Guide the students in planning actions that are doable. If a destructive weather event occurs, encourage the students to respond with their planned activity. In this concrete way, students can experience responding to the demands of justice that Jesus teaches us to do.

Focus:

Social justice.

Concept:

Helping in times of disaster.

Grade 5
Earth and Space Systems
Weather

Relating Science and Technology to the World Outside the School:

- Describe ways in which weather conditions affect the activities of humans and other animals.
- Explain how climatic and weather conditions influence the choice of materials used for building shelters.
- Understand and explain the importance of weather forecasts for people in certain occupations e.g. drought on farmers.

Gospel Values

- † Social justice
- † Community
- † Interdependence
- † Globalism



Focus Concepts

- † The social justice responsibility to respond to people in need.
- † Discuss the affects of severe weather and weather disasters on the lives of people.
- † Explain how climatic and weather conditions influence the choice of materials used for building shelters.



Sample Demonstrations

- † Present a news story about a weather event occurring in the world.
- † Create a disaster relief plan that is doable for students e.g. creating "shoebox" care packages for people displaced from their homes.
- † Contact their local chapter of the Canadian Red Cross or visit their website at www.redcross.ca.
- † Research what materials are used to build homes in various parts of the world.

RESOURCES

Religious Education Program:
May We Be One

- † Unit 6: The Church acts justly.
- † Unit 6: Theme 16-18 Let justice flow like water.

Fully Alive: Family Life

- † Theme 1: Created and Loved by God. Topic 5: We are connected.
- † Theme 5: Living in the World
Topic 3- Signs of a good community

Additional Resources:

- † *Celebrating our Environment - #18 Crystals of Ice and Snow*
- † *Loving our Neighbour the Earth - Lesson 6: Caring for One Another*

Life Systems

Diversity of Living Things

"The study of living things in Grade 6 focuses on the use of classification systems as ways of learning about the great diversity of species and as ways of organizing the study of species. Particular attention is given to the classification of organisms in the animal kingdom. Classifying animals not only will enable students to learn about many different types of animals, from mammals to microscopic organisms, but will help them to observe and describe similarities and differences among species more precisely. To acquire first-hand experience in studying the diversity of living things, students will examine and classify organisms in a specific habitat - a pond, for example."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

As students study the amazing diversity of animals and how we classify them to study the many species, a connection with Gospel values would be to consider related social justice issues. We have a serious responsibility to respect and protect animal rights. We frequently hear of different endangered species of animals and we easily think someone else will deal with the issue. Because we believe in the sacredness of all created life, we need to become more aware of some actions we can take to support social justice groups who work to protect animals. Review the life of St. Francis who is a saint known for his care of animals.

Added Note: Schools have sets of preserved specimens for classification. The decision to use these specimens in inquiries rests with the comfort level of the individual teacher. Students will invariably ask where these animals came from and how they came to be in jars. Teachers will need to address those issues when they arise in the classroom. Alternatively, teachers may wish to use the software available in the school e.g. Digital Trip to the Wetlands, and Digital Trip to the Rainforest to observe animals in another way.

Focus:

Social justice.

Concept:

Preservation and protection of animals.

Grade 6
Life Systems
Diversity of Living Things

Relating Science and Technology to the World Outside the School:

- Identify various kinds of classification systems that are based on specific criteria and used to organize information.
- Describe specific characteristics or adaptations that enable each group of vertebrates to live in each particular habitat.
- Explain the importance of maintaining the habitat for the survival of the species.

Gospel Values

- † Social justice
- † Animal rights
- † Respect for life
- † Common Good



Focus Concepts

- † To respect and protect animal rights



Sample Demonstrations

- † Review the stories of Creation of different faiths and compare and contrast the Christian Creation story with one of another faith (See Resources below)
- † Contact one of the animal protection groups e.g. www.wwf.org and create a single page poster that describes a concrete example of protecting animal life. Share it with classmates and family.

Religious Education Program:

You Shall Be My Witnesses

- † Unit 5: Theme 14-15 - To stir up a sense of justice
- † Unit 10: Theme 29 - To explore our lives as witnesses.

Fully Alive: Family Life

- † Theme 3: Topic 4 - Growing and Changing
- † Theme 5: Topic 3 - We influence the World

RESOURCES

Additional Resources:

- † Loving our Neighbour, The Earth - Lesson 1: Knowing Our Companions, Lesson 2: Noah's Team
- † Worlds of Difference
- † *Celebrating Animals* - Unit 10 Help
- † Animal Alliance of Canada 416-462-9541
- † World Wildlife Fund www.wwf.org
- † Federation of Ontario Naturalists 416-444-8419
www.ontarionature.org

Matter and Materials

Properties of Air and Characteristics of Flight

"Students will continue to broaden their understanding of the gaseous state of matter by focusing on the properties of air. Through investigations, observations, and experiments, students will discover that gases such as air take up space, have mass, and expand when heated. In addition, students will learn that to a large degree the ability to fly - of both living creatures and aircraft - depends on forces related to air pressure. As students investigate the properties of air, they will begin to understand how it can be a means to achieve lift, movement, and control in flying devices."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

As the study of this topic unfolds, there can be a meaningful experience of relating the concepts of the properties of air to some of the understandings of how the Holy Spirit works within us as the People of God. In the story of Pentecost, "A sound like the rush of the violent wind filled the house where they were sitting." (Acts 2:2). This image describes part of the experience the believers had in the coming of the Holy Spirit as wind and tongues of fire. The movement of air is wind; it exhibits power and strength. In the story of Nicodemus (John 3:1-8), the power of the Holy Spirit working within him is described as wind blowing. The Grade 6 students are challenged to be open to the power of the spirit working within them so they can be living witnesses of Jesus. In other scripture passages, the image of the wind is used to describe God's action in our lives. At the conclusion of this topic, the students are asked to list the characteristics of air. After reading the scripture passages about wind, identify parallel characteristics of God's action in our lives working to help us become witnesses.

Focus:

God's action working in our lives.

Concept:

Identify parallel characteristics of God's action in our lives working to help us become witnesses.

Grade 6
Matter and Materials
Properties of Air and Characteristics of Flight

Relating Science and Technology to the World Outside the School:

Gospel Values

- Describe the characteristics of air and the various ways they can be applied to the principles of flight.

- † Faith
- † Sacred scripture
- † Spirituality
- † Incarnation
- † Conversion



Focus Concepts

Sample Demonstrations

- † Identify parallel characteristics of God's action in our lives working to help us become witnesses.

- † Read scripture passages (see below) to identify the image of the Holy Spirit working in our lives as wind. When we allow the spirit to work within us, we become witnesses for Jesus.
- † Create a T-chart identifying the characteristics of air/wind and the characteristics of the Holy Spirit working in our lives.



RESOURCES:

**Religious Education Program:
You Shall Be My Witness**

- † Unit 1: Theme 3 - The image of fire (and wind) for God and the Holy Spirit
- † Unit 5: Theme 15- People who work for social justice.
- † Unit 10: Theme 29 - Explore our lives as witnesses.
- † Scripture Passages:
 - Acts 2:1-12
 - John 3:1-8
 - Genesis 8:1-3
 - Numbers 11:31
 - Matthew 8:23-27

Fully Alive: Family Life

- † Theme 1: Topic 5 We can make a difference
- † Theme 4: Topic 1 Learning about Commitment
- † Theme 5: Topic 3 We Influence the World

Additional Resources:

- † *Loving our Neighbour the Earth - Lesson 20 Come Holy Spirit Creator Come*
- † *Loving our Neighbour the Earth - Lesson 13 God is Like a Tree*
- † *Celebrating our Environment - #5 Masters of Flight*
- † *Celebrating with Science - #1 The Air we Breathe*

Grade 6
Structures and Mechanisms
Motion

Relating Science and Technology to the World Outside the School:

- By observing the effects of motion, students will continue to develop their understanding of stability in systems.

Gospel Values

- † Faith
- † Revelation
- † Sacred scripture
- † Spirituality



Focus Concepts

- † Link stability in systems to foundational stability in our faith journey (Old Testament, New Testament, Beatitudes).
- † Understand the relationship between God's covenant in the Old Testament, the New Testament and the Beatitudes and our personal faith journey.



Sample Demonstrations

- † Working in groups, have students use the mechanisms they have made, identify the stability in the system and prepare an explanation or life story that shows the connection with one of the faith journey characteristics of stability. Encourage the students to incorporate concrete everyday examples from life.
- † Brainstorm ways in which mechanisms can be modified to produce less waste, pollution in order that we may show care for creation.

RESOURCES

Religious Education Program:

You Shall Be My Witnesses

- † Unit 1: Theme 1 - Love is from God.
- † Unit 3: Themes 7-9 - I will make an everlasting covenant with you.
- † Unit 4: Themes 10-12 - I will make a new covenant with you.
- † Unit 6: Themes 16-18 - To recognize the Beatitudes as gift of God.
- † Unit 10: Themes 28-30 You shall be my witnesses.
- † Songs: God's Covenant #7, Blest Are They #12, You Shall be My Witnesses, #23.

Fully Alive: Family Life

- † Theme 1: Topic 1- A life giving love, Topic 4- Life-givers.
- † Theme 4: Topic 1 - Learning about commitment.
- † Theme 5: Topic 2 - Our values, Topic 3 - We influence the world.

Additional Resources:

- † *20 Prayer Lessons for Children - Lesson 8 Beatitudes, Lesson 10 Commandment.*
- † *20 More Prayer Lessons for Children - Lesson 28 Promises of God.*

Energy and Control

Electricity

"Electricity is a versatile form of energy that students encounter every day. Although students will already know about many of the uses of this convenient source of energy, they need to develop a deeper understanding of how it can be used to send signals. It is important for students to learn about this specialized area of study called electronics, which has made a major impact on our lives through many products and devices. Building on previous learning, students will explore devices that use tiny electric currents to switch electric circuits on and off, in order to understand how electronic systems are able to control very complicated processes automatically. As students expand their knowledge of the significant role electricity has in their lives, they should strengthen their awareness that they have control over the amount of electricity they use in the home and at school, as well as their awareness of the potential impact of the over-consumption of energy on our electricity supply."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

God is love. This simple but most profound statement is at the very heart of our faith and beliefs. To help us grow in the understanding of profound truths of our faith, Jesus would often use images to help the people understand. We might use the scientific knowledge of how electrical energy is transformed into other forms of energy as an image to deepen our understanding of the power of God's love working in our lives. This power of God's love truly can transform our lives. The God presence is within every human person. In faith when we open ourselves to this God presence, it is then that goodness goes out through our actions of kindness, caring and forgiving, etc. It is in this way that our lives are transformed. The theme of the grade 6 program is about being a witness to Jesus. We are witnesses to the God presence within us when we do good actions. As the theme of witnessing unfolds, students might design a diagram showing how electrical circuits can be used as an image of God's transforming power.

Focus: Empowerment.

Concept: The power of God's love truly can transform our lives so that we carry out acts of kindness and goodwill toward others.

**Grade Six
Energy and Control
Electricity**

**Relating Science and Technology to the
World Outside the School:**

- Design and construct a variety of electrical circuits and investigate ways in which electrical energy is transformed into other forms of energy.

Gospel Values

- † Empowerment
- † Common Good
- † Witnessing



Focus Concepts

- † Compare the transfer of energy to positive energy when it is experienced through acts of kindness and goodwill toward others.

Sample Demonstrations

- † During the Lenten season, have students draw a name of a classmate from a basket. They are now their secret prayer buddy to whom they will send inspirational or kind messages until Easter.
- † Create a 'goodness' circuit on a bulletin board where acts of kindness are connected and resemble a circuit.
- † Using paper and/or cardboard, design a variety of shapes and sizes of electric bulbs. On each bulb, write an example of a 'goodness action'. Invite students to draw one out of a box and challenge themselves to put it into action.



RESOURCES

Religious Education Program:

You Shall be My Witnesses

- † Unit 1: Love is from God
- † Unit 5: Examining issues of justice
- † Unit 6: Love your enemies.
- † Unit 10: You shall be my witnesses.

Fully Alive: Family Life

- † Theme 1: Topic 1 To be created and loved by God
- † Theme 1: Topic 5 We can make a difference
- † Theme 3: Topic 2 Love and life.
- † Theme 5: Topic 3 We influence the world

Additional Resources:

- † *Celebrating with Science- #18 Light and Life, #19 Circuits.*
- † *Loving our Neighbour the Earth - Lesson 6 Caring for One Another*

Structures and Mechanisms

Motion

"In previous grades, students will have had many experiences observing different kinds of motion. Students in Grade 6 will learn to classify these kinds of motion as linear (e.g., a sliding door), rotational (e.g., a Ferris wheel or carousel), reciprocating (e.g., a self-inking stamp), and oscillating (e.g., a swing). They will learn to analyse and predict the motion of objects, devices, and systems by understanding the forces that act on them and that determine the magnitude, speed, and direction of movement. Students will make different mechanisms that move in different ways, and will learn how mechanisms change one type of motion into another. By observing the effects of motion, students will continue to develop their understanding of stability in systems. Students will also be introduced to the concept of kinetic energy."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

When we hear the word motion, we generally think of some form of movement. In this strand, as students classify the kinds of motion, analyze and predict the motion that occurs from forces acting on an object, and observe the effects of motion, they will develop also their understanding of stability in systems. Stability is a key word here because all action of motion still needs the concept of stability. An understanding of the necessity for stability is a natural link for students to understand what provides stability in our ongoing movement of our faith journey in friendship with God. Obviously, God and the promise of God's love are at the foundation of the stability in our faith journey. In *You Shall Be My Witnesses*, some of the other foundational aspects of stability within our faith journey include the sacred covenant God has made with the people in the Old Testament and the promise of a new covenant in Jesus. Jesus' teachings of the Beatitudes provide another important aspect of stability. Working in groups, have students use the mechanisms they have made in the Science & Technology program, identify the stability in the system and prepare an explanation or life story that shows the connection with one of the faith journey characteristics of stability, i.e. God's Old Testament, New Covenant or the Beatitudes.

Focus:

Faith

Concept: Link stability in systems to foundational stability in our faith journey (Covenant of the Old Testament, New Testament, Beatitudes).

Earth and Space Systems**Space**

"Space science involves learning about objects in the sky, particularly their form, movements, and interactions. In this strand, students will develop an understanding of earth and space and of the relationship of earth to the other bodies in the solar system. Investigations will involve extensive work with models of the different bodies to allow students to explore their size, position, and motion, as well as relationship to one another. In learning about space, students will come to appreciate that our ability to observe and study objects in space has been greatly enhanced by the use of technological devices."

The Ontario Curriculum, Grades 1-8: Science and Technology, 1998.

A Catholic Perspective

God has created all of this! It is truly awesome when we begin to grow in awareness of the vastness of the universe. It is good to celebrate the amazing gift of creation; each one of us is and, on the other hand, realize that we are a very small part of the whole universe. Let us praise God for all the gifts of creation. The many advances of technology have been accomplished because of the amazing creativity of humans. To keep all of this in perspective, it is good to take time to reflect on God's amazing creation and to give thanks.

Focus:

Awe and wonder.

Concept:

We give thanks for the wonders of creation.

Grade 6
Earth and Space Systems
Space

Relating Science and Technology to the World Outside the School:

Gospel Values

- Describe the physical characteristics and components of the solar system - the sun, the planets, natural satellites, comets, asteroids, and meteoroids.
 - Identify cycles in nature and describe the changes within the cycles.
 - Recognize major constellations visible at night and describe their origins.
- † Faith
 - † Creation
 - † Spirituality
 - † Worship



Focus Concepts

Sample Demonstrations

- † Deepening our awareness of the majesty of God's creation.
- † Recognizing that worship is a way to express our response to the deepest inner spiritual realities.



- † Create a prayer or poem or painting of praise for creation of the universe. (Use Van Gogh's "Starry Night" painting for inspiration).
- † Label a bulletin board "Awesome". Have the students bring pictures of "awesome" examples of creation to display. Have students write descriptions of an "awesome" example of creation and add to the bulletin board.

RESOURCES

Religious Education Program:

You Shall be My Witnesses

- † Unit 1: I love you with an everlasting love.
- † Unit 2: Theme 4- Created in the Image of God
- † Psalm 148: Praise for God's Universal Glory

Fully Alive: Family Life

- † Theme 1: Created and Loved by God. Topic 1: A life giving love

Additional Resources:

- † *Celebrating with Science - #10 - Earth the Blue Planet*
- † *Celebrating with Science - # 21 Light and Dark*
- † *Celebrating Our Environment - #16 The Heavens are Telling*
- † *Loving our Neighbour the Earth - Lesson 2 To Celebrate Creation*