Mary Queen of Peace School
Science Curriculum Grade 8 (2012)

Subject	Grade	Unit Name
Science	8	Living Things

Stage 1: DESIRED RESULTS

Established Goals / Content Standards

3.1A Organisms have basic needs for survival

3.1B Organisms progress through life cycles unique to different types of organisms.

3.1C Cells re the fundamental units of structure and function of all living things.

3.1D Plants and animals have different structures that serve similar functions necessary for the survival of the organism.

3.1E Biological classifications are based on how organisms are related.

3.2A The cell contain a set of organelles that interact to carry out life processes through physical and chemical means.

3.2B Photosynthesis and cellular respiration are complementary processes necessary to the survival of most organisms on Earth.

3.2C. Complex multi cellular organisms have systems that interact to carry out life processes through physical and chemical means.

3.2 E. Protein structure and function are coded by the DNA (Deoxyribonucleic Acid) molecule

3.2F Cellular activities and responses can maintain stability internally while external condition are changing.

3.2G Life processes can be disrupted by disease (intrinsic failures of the oragan systems or by infection due to other organisms).

3.3A. Reproduction can occur asexually or sexually.

3.3B All living things have genetic material (DNA) that carries hereditary information.

3.3C Chromosomes are components of cells that occur in pairs and carry hereditary information from one cell to daughter cells and from parent to offspring during reproduction.

3.3D There is heritable variations within every species of organism.

3.3E The pattern of inheritance for many traits can be predicted by using the principles of Mendelian genetics.

4.1B Living organisms have the capacity to produce population of infinite size, but environments and resources are finite.

4.1C All organisms including humans and their activities cause changes in their environment that affect the ecosystem.

4.1D The diversity of species within and ecosystem is affected by changes in the environment, which can be caused by other organisms or outside processes.

4.2B Matter is recycled through an ecosystem.

4.3A Evidence for the nature and rates of evolution can be found in anatomical and molecular characteristics of organisms and the fossil record.

4.3B Reproduction is essential to the continuation of every species.

4.3C Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem.

7.1A Scientific inquiry includes the ability of students to formulate a testable question and explanation and to select appropriate investigative methods in order to obtain evidence relevant to the explanation.

7.1B Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations.

7.1C Scientific inquiry includes evaluation of explanations in light of evidence and scientific principles.

7.1D The nature of science relies upon communications of results and justification of explanations.

8.1B Advance in technology often result in improved date collection and an increase in scientific information.

8.1C Technological solutions to problems often have drawbacks as well as benefits.

8.2A People of different gender and ethnicity have contributed to scientific discoveries and the invention of technological innovations.

8.2B Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity.

8.3A People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done.

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Understandings

Classification is a way of organizing in groups, living things with similar characteristics.

Changes in living things have evolved over time.

All living things have basic needs for survival.

Sexual reproduction enables living things to adapt to changing environments.

Traits can be traced to ones DNA, and are passed on by both parents.

Essential Questions

How are living things classified?

What are the characteristics of each group ?

How are living things interrelated?

How far back can we trace these kingdoms?

How do we define living things.

What are the basic needs of living things.

Knowledge

Why viruses are not considered living things?

Positive and negative impact of both bacteria and viruses.

Adaptations needed to move from the water environment to land, by both plants and animals.

The balanced equation for photosynthesis.

How the oxygen, carbon dioxide works in our environment.

The Nitrogen cycle and how it works.

History of the classification system.

Common diseases, and symptoms caused by living things.

Diseases can be transferred by living things.

Characteristics of Kingdoms and phylum of living things.

Skills

The ability to write and understand a balanced equation for photosynthesis.

Use of a taxanomy key.

Punnet squares for Dominate, recessive, codominate traits.

Stage 2: ASSESSMENT EVIDENCE

Performance Tasks

Tree report

Power Point presentation on an animal of their choice.

Growing and caring and recording of plants from seed to transplanting into Butterfly Garden.

Observations on Butterfly Garden

Other Evidence

Test

Contribution to class discussion

Class notes and notes from reading

Key Criteria

Understanding of basic needs of living things, how living things are classified and how traits are passed onto the next generations.

Stage 3: LEARNING PLAN

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Subject	Grade	Unit Name
Science	8	Genetics

Stage 1: DESIRED RESULTS

Established Goals / Content Standards

3.2 E. Protein structure and function are coded by the DNA (Deoxyribonucleic Acid) molecule.

3.3.B All living organisms have genetic material(DNA) that carries hereditary information.

3.3C. Chromosomes are components of cells that occur in pairs and carry hereditary information form one cell to daughter cells and from parent fot offspring during reproduction.

3.3D. There is heritable variations within every species of organism.

3.3E. The pattern of inheritance for many traits can be predicted by using the principles of Mendelian genetics.

7.1A Scientific inquiry includes the ability of students to formulate a testable question and explanation and to select appropriate investigative methods in order to obtain evidence relevant to the explanation.

7.1B Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations.

7.1C Scientific inquiry includes evaluation of explanations in light of evidence and scientific principles.

7.1D The nature of science relies upon communications of results and justification of explanations.

8.1B Advance in technology often result in improved date collection and an increase in scientific information.

8.1C Technological solutions to problems often have drawbacks as well as benefits.

8.2A People of different gender and ethnicity have contributed to scientific discoveries and the invention of technological innovations.

8.2B Scientific theories are developed based on the body of knowledge that exists at any particular time and must be rigorously questioned and tested for validity.

8.3A People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done.

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Understandings

Genetics is what we are all made of.

Sexual reproduction results in a wide variety of characteristics.

Adaptation to changing environment is easier for living things that sexually reproduce.

Changes in environments can cause changes in populations of living things.

Many diseases are linked to ones DNA.

Modern genetics has changed our knowledge base drastically in the last few years.

Essential Questions

What give us our characteristics?

How are characteristics passed on in asexual and sexual reproduction?

What are the amino acids of DNA?

Knowledge

How traits are passed on from parents to offspring.

How amino acids pair in DNA.

Skills

The ability to do Punnet squares for dominate, recessive, and codominate genes.

Stage 2: ASSESSMENT EVIDENCE

Performance Tasks

Creation of an imaginary family using dominate and recessive of imaginary parents.

Other Evidence

Test

Contribution to class discussion

Class notes and notes from reading

Key Criteria

Demonstrate how genetics is responsible for our characteristics.

Stage 3: LEARNING PLAN