Davison Community Schools
ADVISORY CURRICULUM COUNCIL
Phase II, October 16, 2015

Life Skills Biology

Course Essential Questions (from Phase I report):

How do cells contribute to the function of living organisms?
How do organisms live and grow?
How and why do living and non-living things interact in an ecosystem?
How do living organisms pass traits from one generation to the next?"
What is the evidence for evolution?
How and why do scientists classify living things?
What evidence shows that different species are related?

Phase II Curriculum

Unit: Functions of Life

Essential Questions:	Essential Understanding:
How do you know something is alive? What are the functions of life?	Needs of living things—grow, need food, need water. An organism is any living thing. Organisms are made of cells. Organisms use energy. Organisms reproduce. Organisms grow and develop. Organisms adapt to their environment. Organisms can move.

Curriculum Standards- DOK noted where applicable with Standards

L.CE.SI.EB.III.1.m.1a
Discriminate between living and non-living things.
L.CE.SI.EB.III.1.h.1a
Identify characteristics of all living things.
L.OR.FI.EB.III.2.h.3a
Explain why plants and animals store food
L.OR.FI.EB.III.2.h.4a
Recognize how living things maintain a healthy balance.

LEARNING TARGETS

Knowledge/Content I Know …	Skills/Processes I Can …
Organisms sense changes and respond to them. Something that makes an organism change its activity is called a stimulus. To stay alive an organism must keep a stable environment, which is called homeostasis. Organisms need energy to carry out the activities of life. Reproduction means creating new life (having babies) All living things grow by getting bigger and older. Adapting means to adjust to change. Ingestion is the taking of food. Digestion is the breaking down of food. Respiration is breathing. Excretion means getting rid of waste products. Circulation is the movement of materials in your body, like blood and oxygen. All living things can move on their own.	Identify characteristics of all living things. Analyze organisms' responses to external stimuli. Distinguish between living and non-living things. Recognize how living things maintain a healthy balance. Explain why plants and animals store food

Phase II Curriculum Unit: Cells	
Essential Questions: Why are cells important? Are all cells the same? Why or why not? How do cells work?	**Essential Understanding:** All organisms are composed of cells whose functions sustain life. Cells are the building blocks of life. Every organism is made of one or more cells. All cells are basically the same. Animal cells and plant cells are slightly different.

Curriculum Standards- DOK noted where applicable with Standards

L.CE.FI.EB.III.1.m.1a
Recognize that all living things are made of cells: some consist of a single cell and some are multi-cellular.
L.CE.FI.EB.III.1.h.1a
Recognize that multi-cellular organisms grow and reproduce.
L.CE.FI.EB.III.1.h.2a
Recognize that plants and animals have specialized cells that carry out specific life functions.
L.OR.FI.EB.III.2.h.4a
Recognize how living things maintain a healthy balance.

LEARNING TARGETS

Knowledge/Content **I Know** …	Skills/Processes **I Can** …
Cells come from only like cells. Cell reproduction is part of growth— the need for hair cuts. Hair cells only produce hair cells. Leaf cells only produce leaf cells. A plant cell has an extra barrier called a cell wall. One of the chemicals that cells need is water.	Justify the importance of cells. Classify cells by cell type. Identify the parts of an animal cell and the parts of a plant cell. Explain which chemicals are used to carry out various cell activities. Describe the difference between eukaryote and prokaryote cells.

Cells that are about 70% water. Proteins are large molecules in a cell that carry out the functions of life. DNA determines what cells will do. Carbohydrates are for energy and energy storage. ATP is the fuel for a cell. Lipids store energy or makeup the cell membrane. Things must be able to move in and out of cells. Cells need to take in water and food. When you feel hungry, your body is telling you that your cells need energy. When cells go through stages of life, it is called the cell cycle. Prokaryotes are cells that do not have a nucleus. Eukaryotes are cells that have a nucleus. There are 4 stages of mitosis: prophase, metaphase, anaphase, and telophase.	

Phase II Curriculum Unit: Classification	
Essential Questions: Why are organisms divided into categories? How are organisms classified?	**Essential Understanding:** Each organism is classified into seven levels of taxonomy based on similarities. The seven levels of taxonomy are organized from most general to most specific.
Curriculum Standards- DOK noted where applicable with Standards	
L.OR.FI.EB.III.2.e.1ADDh Identify specific variations of observable body parts in a variety of animals. **L.OR.FI.EB.III.2.h.1a** Compare and/or classify organisms in major groups based on their structure. **L.OR.SI.EB.III.2.h.1a** Identify the differences between characteristics or parts of plants and animals.	
LEARNING TARGETS	
Knowledge/Content **I Know** …	**Skills/Processes** **I Can** …
The classification of organisms is called taxonomy. The seven divisions for organisms are organized from the most general to the most specific. Kingdom is the most general division. The most specific division is the species. A species is a group made up of all the same organisms that can have babies.	Identify plants and animals. Describe and compare the characteristics of organisms such as bacteria, viruses, protists, fungi, plants, and animals. List the 6 different kingdoms into which organisms are divided. Identify the seven current divisions for organisms. Give examples of species and the kingdom they belong to.

Phase II Curriculum Unit: Heredity and Reproduction	
Essential Questions:	**Essential Understanding:**
How do organisms reproduce? What determines which traits you inherit from each parent? Why do certain traits skip a generation?	Parents pass on traits to their children. Genes give instructions for what traits offspring will have. Children get half their genes from their mom and half their genes from their dad. Organisms can reproduce asexually or sexually. Offspring that are produced sexually are not identical to either parent. Offspring that are produced asexually are identical to their parent.
Curriculum Standards- DOK noted where applicable with Standards	
L.HE.FI.EB.III.3.h.1a Identify and/or describe how characteristics of living things are passed on from generation to generation. **L.HE.FI.EB.III.3.h.2a** Identify how genetic material is passed from parent to young.	
LEARNING TARGETS	
Knowledge/Content **I Know** …	**Skills/Processes** **I Can** …
Traits are the physical characteristics that an organism possesses. Heredity is the passing of traits from parents to offspring. A dominant trait is a trait that is most likely to appear. A recessive trait is a trait that is least likely to appear.	Explain that inherited traits are contained in in genetic information. Analyze changes in traits that occur over several generations. Explain how dominant and recessive genes influence inherited traits. Analyze genotypes of parents and make predictions about possible traits passed on to

A gene is the part of DNA that gives instructions for what traits offspring will have. The combination of genes passed onto offspring is called genotype. Phenotype is the way an organism looks. Asexual reproduction needs only one parent. Sexual reproduction happens when a new organism is formed from two parents.	offspring. Compare reproductive processes. Identify organisms that reproduce sexually and asexually.

Phase II Curriculum Unit: The Human Body	
Essential Questions: How does the human body work? What is the human body made of? Why does the human body have different systems?	**Essential Understanding:** The human body is made up of 11 systems that work together. The human body's systems work to keep the body's internal environment stable while the outside environment changes.
Curriculum Standards- DOK noted where applicable with Standards	
L.CE.FI.EB.III.1.h.1a Recognize that multi-cellular organisms grow and reproduce. **L.OR.FI.EB.III.2.h.3a** Explain why plants and animals store food **L.OR.FI.EB.III.2.h.4a** Recognize how living things maintain a healthy balance. **L.OR.SI.EB.III.2.h.4a** Identify the effects of illness on the body and/or avoiding illness.	
LEARNING TARGETS	
Knowledge/Content **I Know** …	**Skills/Processes** **I Can** …
The human body is made of cells, which form tissues. Tissues that work together form organs, and groups of organs that work together form organ systems. You must have bones and muscles to keep your shape and move. The skeletal system provides structure and allows for movement. The muscular system is made of muscles and tendons. The circulatory and respiratory systems work	Explain a body's need to maintain homeostasis. Describe the various organ systems of a human. Contrast voluntary and involuntary muscles. Recognize how living things maintain a healthy balance. Describe how someone breathes. Identify the parts and functions of the endocrine system. List the female reproductive organs.

together to move blood, oxygen, carbon dioxide, and wastes through your body. To breathe you must inhale and exhale. Your body gets its energy from food. The digestive system is a group of organs that break down food to make energy that the body can use. The endocrine system controls the chemical messages that tell your body what to do. The male and female reproductive systems create new life. The nervous system gathers messages from all parts of the body and sends the messages to other parts of the body. Your skin, nails, and hair make up the integumentary system.	List the male reproductive organs. Distinguish between the central and peripheral nervous system. Identify the largest organ of the human body. Analyze the importance of skin.

Phase II Curriculum Unit: Evolution	
Essential Questions:	**Essential Understanding:**
How do organisms change? How do we know organisms have changed?	Organisms adapt to their environment. Organisms change over time.

Curriculum Standards- DOK noted where applicable with Standards

L.EV.FI.EB.III.4.h.1a
Recognize theories that attempt to explain how life evolves.
L.EV.FI.EB.III.4.h.2a
Identify and/or explain how a new species might evolve.
L.EV.SI.EB.III.4.m.2ADDh
Identify characteristics that help living organisms avoid extinction.
L.EC.FI.EB.III.5.h.1a
Describe common ecological relationships between and among species and their environments.
L.EC.FI.EB.III.5.h.2a
Identify and/or explain that energy flows through familiar ecosystems.
L.EC.FI.EB.III.5.h.3a
Identify and/or describe general factors that influence population size in ecosystems.
L.EC.FI.EB.III.5.h.4a
Describe responses of an ecosystem to events that cause it to change.
L.EC.FI.EB.III.5.h.6a
Describe the effects of agriculture and urban development on selected ecosystems.
L.EC.FI.EB.III.5.m.6ADDh
Describe ways in which humans alter the environment.

LEARNING TARGETS

Knowledge/Content **I Know** …	**Skills/Processes** **I Can** …
Evolution is change over time and does not occur in one generation. Darwin's Theory that explains evolution is called Natural Selection. Evolution happens in two ways: mutation and natural selection. Changes happen in populations because genes change.	List the causes of mutation. Describe the theory of natural selection. Explain the methods of dating fossils. Give examples of evolution. Justify the theory of evolution.

Mutations happen at a very slow rate, and are rare. One organism cannot evolve. Adapt means to adjust to a changing environment. The four points of Darwin's theory of natural selection are overproduction, genetic variation, the struggle to survive, and successful reproduction. Fossils are the physical remains of plants and animals preserved in rock or in the earth's crust. Fossils have also been found preserved in ice, tar, and tree sap. There are two ways to figure out a fossil's age: relative dating and absolute dating. Most of the species found in fossil form are extinct. Fossils show how organisms have changed.	

Phase II Curriculum Unit: Bacteria and Viruses	
Essential Questions: Why are bacteria important? Are viruses alive?	**Essential Understanding:** Bacteria are everywhere. Bacteria can be both harmful and helpful. Many diseases are caused by viruses.
Curriculum Standards- DOK noted where applicable with Standards	
L.OR.FI.EB.III.2.h.2a Identify the life cycle of an organism associated with human disease. **L.OR.FI.EB.III.2.h.4a** Recognize how living things maintain a healthy balance. **L.OR.SI.EB.III.2.h.4a** Identify the effects of illness on the body and/or avoiding illness. **L.EC.FI.EB.III.5.m.6ADDh** Describe ways in which humans alter the environment.	
LEARNING TARGETS	
Knowledge/Content **I Know** …	**Skills/Processes** **I Can** …
Bacteria are the most abundant living organisms on earth and the simplest. Bacteria are in the air, soil, water, plants, and animals (including humans). There are 2 kingdoms of bacteria: Eubacteria and Archaebacteria. Bacteria can be both harmful (make you sick) and helpful. Good and harmful bacteria are always in your body. Antibiotics kill bad bacteria in your body. The flu is caused by a virus. If you have ever had a fever and felt achy and had an upset stomach is was probably a virus, like the flu.	Describe bacteria and viruses. Explain the effects of bacteria and viruses. Identify helpful and harmful bacteria, and justify their importance in life. Identify the effects of illness on the body and/or avoiding illness. Identify the life cycle of an organism associated with human disease.

Viruses do not eat, break down food, or use oxygen. They cannot reproduce on their own, they need host cells to live in.	

Phase II Curriculum Unit: Plants and Animals	
Essential Questions:	**Essential Understanding:**
What is a plant? What is an animal? Why do plants and animals store food? How are plants and animals grouped? How do plants and animals carry out the functions of life and survive?	Organisms are producers, consumers, or decomposers. Plants belong to the Plantae kingdom because of shared traits. Animals belong to the kingdom Anamalia because of traits they all share. Plant and animal behavior, characteristics, and functions.
Curriculum Standards- DOK noted where applicable with Standards	
L.CE.FI.EB.III.1.h.1a Recognize that multi-cellular organisms grow and reproduce **L.OR.FI.EB.III.2.e.1ADDh** Identify specific variations of observable body parts in a variety of animals. **L.OR.SI.EB.III.2.e.1ADDh** Identify observable characteristics of animals. **L.OR.FI.EB.III.2.h.3a** Explain why plants and animals store food **L.OR.FI.EB.III.2.h.4a** Recognize how living things maintain a healthy balance. **L.EC.FI.EB.III.5.h.1a** Describe common ecological relationships between and among species and their environments. **L.EC.FI.EB.III.5.h.2a** Identify and/or explain that energy flows through familiar ecosystems. **L.EC.FI.EB.III.5.h.3a** Identify and/or describe general factors that influence population size in ecosystems. **L.EC.FI.EB.III.5.h.4a** Describe responses of an ecosystem to events that cause it to change. **L.EC.FI.EB.III.5.h.6a** Describe the effects of agriculture and urban development on selected ecosystems. **L.EC.FI.EB.III.5.m.6ADDh** Describe ways in which humans alter the environment.	
LEARNING TARGETS	
Knowledge/Content **I Know** …	**Skills/Processes** **I Can** …

Plants are organisms like trees, grass, flowers, and shrubs that make up the kingdom Plantae. All plants have eukaryotic cells that have cell walls. Most plants produce energy through photosynthesis. There are two main groups of plants: nonvascular plants and vascular plants. Nonvascular plants do not have any tubes. Vascular plants have a system of tubes to carry water and nutrients to all the parts of the plants. Gymnosperms can reproduce asexually by growing a new plant from a piece of the original plant. Angiosperms are flowering plants that reproduce sexually. Parts of the plant include: roots, stems, leaves and seeds. A carnivore is an animal that only eats other animals. A herbivore is an animal that only eats plants. An omnivore is an animal that eats other animals as well as plants. Animals are divided into two main groups: invertebrates (no back bone) and vertebrates (back bone). Radial symmetry is when an animal has legs or other body parts that are arranged like spokes on a wheel (circular). Bilateral symmetry is when the right and left side of an animal are the same. Cold-blooded animals are animals with body temperatures that change depending on the temperature around them.	Describe organisms as producers, consumers, and decomposers. Compare nonvascular and vascular plants, as well as gymnosperms and angiosperms. List the parts of a plant and describe their functions. Describe animals as carnivores, herbivores, and omnivores. Compare different types of invertebrates and vertebrates. Explain the difference between radial and bilateral symmetry. Contrast cold-blooded and warm-blooded animals.

Warm-blooded animals are animals whose body temperature remains constant.	