

Area of Focus: 6th Grade Science, Microbiology

Learning Objective: The student will observe, collect data and construct a science experiment evaluating the growth of microbes in a closed environment.

Teaching Methods and Process:

Research:

- The student will use technology to research and organize a variety of information on microbes.
- The student will research the affects of microbes on life.
- The student will research the growth patterns of microbes.
- The student will read current scientific articles about microbe use and technology and its effectiveness in helping humans

Reason:

- The student will respond to questions about the use of microbes.
- The student will compare the useful and harmful uses of microbes for humans.
- The student will analyze current scientific use of microbes for environmental cleanup.

Relate:

- The student will construct a lab and relate the growth patterns of a variety of collected microbes from various sources in the school environment.
- The student will evaluate how microbes can be useful to humans and to themselves.
- The student will use observation, data collection and analyzation skills to conclude

Record:

- The student will record collected data in a table.
- The student will respond to essay questions regarding useful and harmful effects of microbes.

Learning Evaluation: Heart and Mind

The student will experience collecting data, analyzing data, experimenting on that data and communicating that data in a useful way (Scientific Method).

Area of Focus: 6th Grade Science, Astronomy

Learning Objective: The student will observe, compare, and analyze celestial bodies to synthesis and produce a teaching model/project.

Teaching Methods and Process:

Research:

- The student will use technology to research current scientific knowledge of celestial bodies and approximate distances relations
- The student will use technology to research and comprehend the origin of celestial bodies and compare current and past scientific theory
- The student will articulate what matter is and its relationship to celestial bodies

Reason

- The student will compare celestial bodies using a graphic organizer
- The student will map out the life cycle of stars
- The student will compare the Law of Conservation of Matter to scripture
- The student will correlate distance in space
- The student will describe how technology is used in astronomy and predict what science may discover in the future using technology

Relate

- The student will articulate what matter is and its relationship to celestial bodies
- The student will identify earth's place in the universe and recall the order of planets through a sketch.
- The student will experience the force of gravity and relate this to how celestial bodies stay in orbit
- The student will use observation, data collection and analyzation skills to conclude

Record

- The student will collect and record data from science labs
- The student will respond to essay questions related to unit standards and objectives
- The student will prepare a report demonstrating new knowledge gained

Learning Evaluation: Heart and Mind

The student will use their new knowledge to prepare a digital or written report to present to an audience.

Area of Focus: 6th Grade Science, Physical Science (light, heat and sound)

Learning Objective: The student will observe, analyze and evaluate the flow of energy in the form of light, heat and sound and compare its effects on physical objects.

Teaching Methods and Process:

Research:

- The student will use technology to research properties of matter and its relationship to energy
- The student will read an article on the 3 ways that heat moves through the environment
- The student will study the anatomy of a wave

Reason

- The student will compare the anatomy of a wave in light and sound
- The student will evaluate the way heat moves and identify examples of movement
- The student will use models to analyze heat movement through the environment

Relate

- The student will compare the differences in a light wave and a sound wave
- The student will use observation, data collection and analyzation skills to conclude
- The student will compare the speed of energy through a vacuum and a medium in relation to the type of energy
- The student will experience a variety of sounds and identify their origins

Record

- The student will collect and record data on the interaction of light
- The student will respond in essay format to questions on energy
- The student will produce an activity comparing a variety of sounds using pitch and vibrations
- The student will record data, observations and analyze and conclude their findings

Learning Evaluation: Heart and Mind

The student will comprehend how energy is used in our universe and understand that all matter exudes a force that can be measured and observed. They will organize the three types of energy discussed in this unit in a presentable format.

Area of Focus: 7th Grade Science, Cellular Biology

Learning Objective: The student will be able to state structure and function of several organelles of the cell and delineate how cells multiply.

Teaching Methods and Process:

Research:

- The student will use scientific instruments to observe and describe different cells
- The student will list the hierarchy of life on earth
- The student will use technology to research the sequence of cell division

The student will sequence the history of cell theory

Reason:

- The student will compare several types of cells and cell organelles
- The student will identify and compare the organelles for photosynthesis and respiration
- The student will analyze the steps in cell division and create a model

Relate:

- The student will relate the structure of organelles to their functional parts
- The student will relate the growth of an organism to cell division, not cell enlargement
- The student will relate how the care of a cell attributes to overall health of a life form
- The student will use observation, data collection and analyzation skills to conclude

Record:

- The student will build a 3D model of the cell identifying the organelles.
- The student will respond in essay format to critical questions regarding the structure, function and life processes of a cell
- The student will record data, observations and analyze and conclude their findings in writing

Learning Evaluation: Heart and Mind

Students will understand that cells are the building blocks of life on earth and that knowing the form and function and how to care for cells improves the quality of life.

Area of Focus: 7th Grade Science, Heredity and Genetics

Learning Objective: The students will understand the blue print for all living things and the form and function of DNA and how it relates to our inherited traits

Teaching Methods and Process:

Research:

- The student will use technology to learn the history of genetics and its root experiment
- The student will examine the DNA molecule and research the scientists who identified its structure

Reason:

- The student will compare inherited traits of an offspring from its parents
- The student will analyze the components of a DNA molecule and how genes are structured

Relate:

- The student will predict how certain traits can be more beneficial for survival of a species
- The student will relate the structure of an organism to its ability to provide for itself
- The student will relate how the DNA molecule relates to cell division
- The student will extract DNA from a living cell and relate to all living things
- The student will use observation, data collection and analyzation skills to conclude

Record:

- The student will create a 3D model of a DNA molecule
- The student will respond to questions in an essay format
- The student will record data, observations and analyze and conclude their findings in writing

Learning Evaluation: Heart and Mind

The student will learn that we are individuals and that a unique genetic code exists for each of us to determine our traits but not our character.

Area of Focus: 7th Grade Science, Classification of Life

Learning Objective: The student will recognize that life has order and is put into organized groups and sub groups.

Teaching Methods and Process:

Research:

- The student will research, using technology, the history of how living organisms are categorized
- The student will apply the existing vocabulary for this unit
- The student will research how binomial names came to be and how they make classification efficient
- The student will research and specific life form for presentation

Reason:

- The student will compare different life forms such as plants and animals
- The student will characterize a variety of life forms
- The student will use deductive reasoning to understand connections between similar life forms

Relate:

- The student will experience, through activity, how a scientist begins to organize a group of items.
- The student will use observation, data collection and analyzation skills to conclude

Record:

- The student will respond to questions from an activity in essay format
- The student will respond to questions in their lab activities
- The student will create a teaching poster for an authentic audience

Learning Evaluation: Heart and Mind

The student will learn that there are many life forms on earth that were created for the benefit of man and that man has stewardship over these life forms and will be accountable for this stewardship.

Area of Focus: 8th Grade Science, Environmental Science (Biomes of the World)

Learning Objective: The student will understand that earth has many environments due to climate and elevation variants and that specific plants and animals adapt to survive in each environment.

Teaching Methods and Process:

Research:

- The student will use technology to research/identify a global map and its biomes
- The student will use technology to research a specific earth biome and the plants and animals that live there

Reason:

- The student will analyze how certain plants/animal adaptations allow it to survive in its environment
- The student will compare structural and behavioral adaptations of plants/animals that live in dry environments to plants/animals that live in wet environments

Relate:

- The student will observe, collect data and analyze forming a conclusion
- The student will participate in a simulation how weather affects an environment

Record:

- The student will respond to questions in an essay format
- The student will record observations and data
- The student will construct a teaching poster for an authentic audience

Learning Evaluation: Heart and Mind

The student will be able to understand that our earth has an expansive variety of life forms that need specific environments to survive and that these life forms may or may not adapt to survive.

Area of Focus: Physical Science (Rocks, Minerals)

Learning Objective: The student will understand that rocks are part of a large system of cycles and that over extended periods of time can change form and composition.

Teaching Methods and Process:

Research:

- The student will research the three ways rock is formed and the conditions in which it happens
- The student will research the correct vocabulary to describe rock cycles

Reason:

- The student will sequence how a sedimentary rock is formed and know that it takes water to lay down rock
- The student will be able to recognize what sedimentary rock looks like after many years
- The student will predict how metamorphic rock is formed using heat and pressure
- The student will discuss how igneous rock is formed and the conditions it must have to be created

Relate:

- The student will relate differences between rock and mineral
- The student will experience the six ways to identify minerals
- The student will construct a teaching poster of how all three ways rock is formed is connected

Record:

- The student will construct a drawing depicting the three ways rock is formed using vocabulary
- The student will observe, collect data and analyze conclusions
- The student will respond to questions in essay format

Learning Evaluation: Heart and Mind

The student will learn that life has many cycles and that our creator has provided a way for earth to be self-sufficient and sustainable while providing for all His children.

Area of Focus: 8th Grade Science, Basic Chemistry

Learning Objective: The student will understand that matter is composed of very small particles that follow natural laws

Teaching Methods and Process:

Research:

- The student will use technology to research the periodic table of elements and understand how it is organized
- The student will research the history of the periodic table and how it has changed little over time
- The student will choose an element and investigate it further by using technology
- The student will use technology to research the history of the atomic theory

Reason:

- The student will compare the differences between elements and what these differences indicate
- The student will infer why some particles adhere to each other and others do not
- The student will compare chemical vs physical properties

Relate:

- The student will observe, collect data and analyze to make conclusions
- The student will observe and relate that mass is conserved in a chemical reaction
- The student will relate that energy is added or taken away in a chemical reaction

Record:

- The student will respond to questions in an essay format
- The student will record observations and write conclusions
- The student will create a detailed document about an element

Learning Evaluation: Heart and Mind

The student will be able to communicate how atoms and molecules build our material world and that all matter has always existed and can change form.

Area of Focus: 8th Grade Science, Physical Science Properties of Matter

Learning Objective: The student will be able to identify how matter interacts and its properties.

Teaching Methods and Process:

Research:

- The student will use technology to research Newton's Three Laws of Motion
- The student will identify the states of matter
- The student will identify the properties of matter (ductility, conductivity, etc.)

Reason:

- The student will list several properties of matter
- The student will draw the states of matter
- The student will observe and demonstrate changes in matter

Relate:

- The student will observe, collect data and analyze conclusions
- The student will demonstrate Newton's Three Laws of Motion
- The student will identify how matter changes and how it affects our daily lives
- The student will demonstrate the relationship between energy, force and motion

Record:

- The student will design and build a balloon powered car
- The student will respond to questions in essay format

Learning Evaluation: Heart and Mind

The student will understand that all matter adheres to natural laws and that these laws can be identified and are universal.