

Lake Washington School District
Teaching and Learning Framework

Grades 3 - 5

Science

Essential Understandings and Guiding Questions
August 2007

Properties of Systems

Essential Understandings

Understand how properties are used to identify, describe, and categorize substances, materials, and objects and how characteristics are used to categorize living things.

Guiding Questions

What is the relationship between the rate of the vibrations and the pitch of the sound?

How are properties of sound used to describe experiences with sound?

What are the properties of magnets?

How can the relative motion and position of two objects be described or compared using a distance scale, distance/time grid, graph, or labeled diagram?

What forms of energy are present in a system?

How do properties of natural materials such as soils and rocks help humans identify, describe, or sort materials?

What is the function of soils in an Earth system?

What are the characteristics that describe living organisms?

What are the differences in the ways animals and plants obtain energy?

What criteria can be used to sort common organisms into either plant or animal groups?

What is water's state in the three phases of matter (solid, liquid, gas) in different situations (e.g. the state of water in a cold freezer is solid and in steam it is gas)

Structure of Systems

Essential Understandings

Understand how components, structures, organizations, and interconnections describe systems

Guiding Questions

What are the parts of a specific life, Earth, or physical system and how do the parts go together?

What is the function of each part of a system?

What would happen if a part of a system were removed or broken?

How does one part of a system depend on the other parts of the same system?

How do Earth, life, or physical systems interact and depend on each other?

What are the parts that compose our Earth system?

What are the changes in the phases of the moon during the lunar cycle?

What is the structure of our solar system?

Structure of Systems (continued)

Essential Understandings

Understand how components, structures, organizations, and interconnections describe systems

Guiding Questions

What are the inputs, outputs, and transfers of energy in a system?

Where, in a system, is stored energy changed to another energy form such as energy of motion, heat, light, or sound?

What is the form of energy before and after a change has occurred as energy flows in a system? (e.g. the energy of motion of hands clapping changing into sound energy).

What are the similarities and differences between a series and parallel circuit system?

What is the path of energy as it flows through a system?

How does the structure of a living thing relate to its function?

How do plant and animal cells look similar and different?

What are the functions of cells?

How do body systems allow the human body to take in and use air, food, and water for energy, growth, and repair?

What is the life cycle of a plant or animal?

Changes in Systems

Essential Understandings

Understand how interactions within and among systems cause changes in matter and energy.

Guiding Questions

What are the states of matter?

How are new products created from changes in matter?

What variables affect balance and motion?

How do Earth materials change by natural and man-made processes?

How do people measure objects and events?

How do indicators in a weather system (temperature, wind direction, speed, and precipitation) change from day to day and from season to season?

How do heat and light from the sun affect living/non-living things?

What do organisms need to sustain life?

What are the changes in the life cycles of plants and animals?

Science, Technology, & Society

Essential Understandings

Know that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.

Guiding Questions

What kind of tools have people invented to help them in every day life?

What is at least one way that science, mathematics, or technology is used by a person in a job?

How do humans and other living things depend on the living and non-living environment for their survival?

How can human behavior impact the environment?

How can resources be conserved through reusing, reducing, and recycling?