

At Missouri School for the Blind we believe student success is our first and foremost responsibility. We further believe, that every student learns in an individual way and at an individual rate; therefore, Missouri School for the Blind differentiates instruction to meet the needs of each learner. For student's whose IEP driven educational program centers on the application of the Show-Me-Standards within the context of essential skills, alternate methods of program planning and alternate assessments are needed. These expanded standards maintain the essence of the Missouri Show-Me-Standards, thereby ensuring that all students have access to, and make progress in, the general curriculum. The alternative GLE's are designed to meet a wide range of students needs; however, each course may be further differentiated through the IEP process to meet those individual needs.

For more information visit our website at: msb.dese.mo.gov

Or contact:

Joy Waddell, Asst. Superintendent
Missouri School for the Blind
3815 Magnolia
St. Louis, Missouri 63110

Phone: 314-776-4320 ext. 1140
Fax: 314-776-1875

joyce.waddell@msb.dese.mo.gov



Missouri School for the Blind

Vocational Education Department

Middle and High School Science



Life Science (SC I)

By the end of SC I, Life Science, students will be able to:

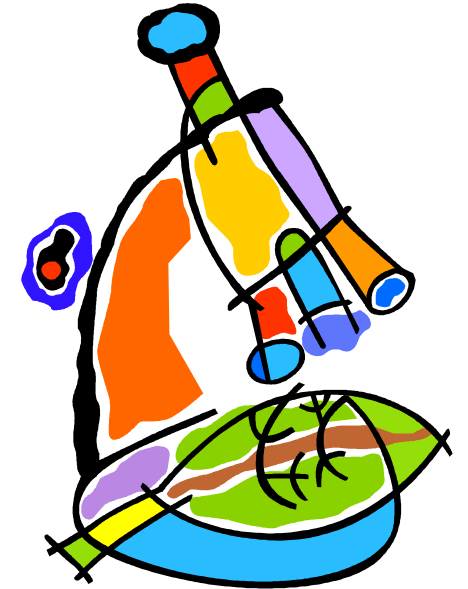
Characteristics and Interactions of Living Organisms

- Recognize that animals progress through life cycles of birth, growth and development, reproduction, and death.
- Record observations on the life cycle of different animals (e.g., butterfly, frog, chicken).
- Sequence the stages in the life cycle of animals (i.e., butterfly, frog, chicken).
- Identify and relate the similarities and differences between animal parents and their offspring.
- Recognize similarities and differences among multiple offspring of an animal parent.
- Describe the basic needs of most plants (i.e., air, water, light, nutrients, temperature).
- Recognize plants progress through life cycles of seed germination, growth and development, reproduction, and death
- Sequence and describe the stages in the life cycle of a flowering plant.
- Identify the major organs (roots, stems, flowers, leaves) and their functions in vascular plants (e.g., absorption, transport, reproduction).
- Illustrate and trace the path of water and nutrients as they move through the transport system of a plant.
- Identify and relate the similarities and differences between plants and their offspring (i.e. seedlings).

Changes in Ecosystems and Interactions of Organisms with their Environments

- Identify sunlight as the primary source of energy plants use to produce their own food.

- Classify populations of organisms as producers or consumers by the role they serve in the ecosystem.
- Sequence the flow of energy through a food chain beginning with the Sun.
- Predict the possible effects of removing an organism from a food chain.



Scientific Inquiry

- Pose questions about objects, materials, organisms, and events in the environment.
- Plan and conduct a fair test to answer a question.
- Make qualitative observations using the five senses.
- Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders).
- Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume using liters.

- Compare amounts/measurements.
- Judge whether measurements and computation of quantities are reasonable.
- Use quantitative and qualitative data as support for reasonable explanations.
- Use data as support for observed patterns and relationships, and to make predictions to be tested.
- Evaluate the reasonableness of an explanation.
- Analyze whether evidence supports proposed explanations.
- Communicate simple procedures and results of investigations and explanations through:
 - oral presentations, writings
 - drawings and maps
 - data tables
 - graphs (bar, single line, pictograph)

Impact of Science, Technology and Human Activity

- Recognize some objects or materials (i.e. Sun, fire, ice, snow) occur in nature (natural objects); others (e.g., stoves, refrigerators, bulbs, candles, lanterns) have been designed and made by people to solve human problems and enhance the quality of life (manmade objects).
- Describe how new technologies have helped scientists make better observations and measurements for investigations (i.e. telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers).
- Research biographical information about various scientists and inventors from different gender and ethnic backgrounds, and describe how their work contributed to science and technology.
- Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of people working alone or in groups solving everyday problems or learning through discovery).
- Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member.

Earth/Space Science (SC 2)

By the end of SC2, Earth/Space Science, students will be able to:

Properties and Principles of Matter and Energy

- Identify sources of thermal energy (i.e. Sun, stove, fire, body) that can cause solids to change to liquids, and liquids to change to gas.
- Identify sources of light energy (i.e. Sun, bulbs, flames).
- Recognize light can be transferred from the source to the receiver (eye) through space.
- Identify the three things (light source, object, and surface) necessary to produce a shadow.
- Recognize the Sun is the primary source of light and food energy on Earth.
- Observe and describe ways humans use Earth's materials (i.e. soil, rocks) in daily life.

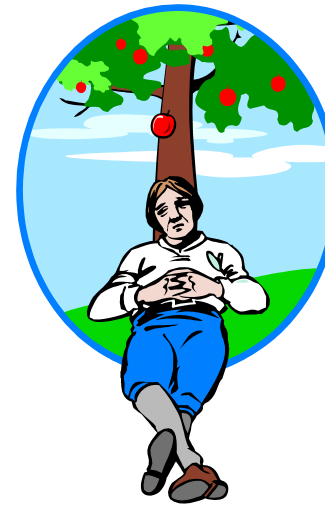
Processes and Interactions of the Earth's Systems

(Geosphere, Atmosphere, and Hydrosphere)

- Observe and describe the physical properties (i.e. odor, color, appearance, relative grain size, texture, absorption of water) and different components (i.e. sand, clay, humus) of soils.
- Observe and describe the physical properties of rocks (i.e. size, shape, color, presence of fossils).
- Observe and recognize examples of slow changes in the Earth's surface and surface materials (i.e. rock, soil layers) due to processes such as decay (rotting), freezing, thawing, breaking, or wearing away by running water or wind).
- Describe how weathering agents (i.e. water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth's surface materials and/or landforms.
- Observe and describe ways humans use Earth's materials (i.e. soil, rocks) in daily life.

Scientific Inquiry

- Pose questions about objects, materials, organisms, and events in the environment.
- Plan and conduct a fair test to answer a question.
- Make qualitative observations using the five senses.
- Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders).
- Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume using liters.
- Compare amounts/measurements.
- Judge whether measurements and computation of quantities are reasonable.



- Use quantitative and qualitative data as support for reasonable explanations.
- Use data as support for observed patterns and relationships, and to make predictions to be tested.
- Evaluate the reasonableness of an explanation.
- Analyze whether evidence supports proposed explanations.
- Communicate simple procedures and results of investigations and explanations through:
 - oral presentations.
 - drawings and maps.
 - data tables.
 - graphs (bar, single line, pictograph).
 - writings.



Impact of Science, Technology and Human Activity

- Design and construct an electrical device, using materials and/or existing objects, that can be used to perform a task.
- Describe how new technologies have helped scientists make better observations and measurements for investigations (i.e. telescopes, magnifiers, balances, microscopes, computers, stethoscopes, thermometers).
- Identify how the effects of inventions or technological advances (i.e. different types of light bulbs, semiconductors/integrated circuits and electronics, satellite imagery, robotics, communication, transportation, generation of energy, renewable materials) may be helpful, harmful, or both..
- Research biographical information about various scientists and inventors from different gender and ethnic backgrounds, and describe how their work contributed to science and technology.
- Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of people working alone or in groups solving everyday problems or learning through discovery).
- Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member.



Changes in Ecosystems and Interactions of Organisms with their Environments

- Identify the ways a specific organism may interact with other organisms or with the environment (i.e. pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism).
- Recognize different environments (i.e. pond, forest, prairie) support the life of different types of plants and animals.
- Identify examples in Missouri where human activity has had a beneficial or harmful effect on other organisms (i.e. feeding birds, littering vs. picking up trash, hunting/conservation of species, paving/restoring *greenspace*).
- Classify populations of organisms as producers, consumers, or decomposers by the role they serve in the ecosystem .
- Differentiate between the three types of consumers (herbivore, carnivore, omnivore).
- Categorize organisms as predator or prey in a given ecosystem.
- Compare and contrast common fossils found in Missouri (i.e. trilobites, ferns, crinoids, gastropods, bivalves, fish, mastodons) to organisms present on Earth today.
- Identify specialized structures and describe how they help plants survive in their environment (i.e. root, cactus needles, thorns, winged seed, waxy leaves).
- Identify specialized structures and senses and describe how they help animals survive in their environment (i.e. antennae, body covering, teeth, beaks, whiskers, appendages).
- Recognize internal cues (i.e. hunger) and external cues (i.e. changes in the environment) that cause organisms to behave in certain ways (i.e. hunting, migration, hibernation).
- Predict which plant or animal will be able to survive in a specific environment based on its special structures or behaviors.

Biological Science (SC 4)

By the end of SC 4, students will be able to:
Characteristics and Interactions of Living Organisms

- Compare structures (i.e. wings vs. fins vs. legs; gills vs. lungs; feathers vs. hair vs. scales) that serve similar functions for animals belonging to different vertebrate classes.
- Explain how similarities are the basis for classification.
- Distinguish between plants (which use sunlight to make their own food) and animals (which must consume energy-rich food).
- Classify animals as vertebrates or invertebrates.
- Classify vertebrate animals into classes (amphibians, birds, reptiles, mammals, fish) based on their characteristics.
- Identify plants or animals using simple dichotomous keys.
- Recognize the major life processes carried out by the major systems of plants and animals (e.g., support, reproductive, digestive, transport/circulatory, excretory, response) (Do NOT assess naming of organs within each system or explanation of the processes carried out by those systems).



Composition and Structure of the Universe and the Motion of the Objects Within It

- Describe our Sun as a star because it provides light energy to the solar system.
- Recognize the moon is a reflector of light.
- Illustrate and describe how the Sun appears to move slowly across the sky from east to west during the day.
- Illustrate and describe how the moon appears to move slowly across the sky from east to west during the day and/or night.
- Observe the change in the moon's appearance relative to time of day and month over several months and note the pattern in this change.
- Recognize there is a day/night cycle every 24 hours.
- Describe the changes in length and position (direction) of shadows from morning to midday to afternoon.
- Describe how the Sun's position in the sky changes the length and position of shadows.

Scientific Inquiry

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 - writings.

Impact of Science, Technology and Human Activity

- Design and construct a musical instrument using materials (i.e. cardboard, wood, plastic, metal) and/or existing objects (i.e. toy wheels, gears, boxes, sticks) that can be used to perform a task.

- Describe how tools have helped scientists make better observations, measurements, or equipment for investigations (i.e. magnifiers, balances, stethoscopes, thermometers).
- Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction) of individuals solving everyday problems or learning through discovery.
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Physical Science (SC 3)

By the end of SC 3 Physical Science, students will be able to:

Properties and Principles of Matter and Energy

- Describe and compare the physical properties of objects by using simple tools (i.e. thermometer, magnifier, centimeter ruler, balance, magnet).
- Classify objects as “one kind of material” or a mixture.
- Observe and describe how mixtures are made by combining solids.
- Describe ways to separate the components of a mixture by their physical properties (i.e. sorting, magnets, screening).
- Compare the observable physical properties of solids, liquids, or gases (air) (i.e. visible vs. invisible, changes in shape, changes in the amount of space occupied).
- Identify everyday objects/substances as solid, liquid, or gas (i.e. air, water).
- Recognize water evaporates (liquid water changes into a gas as it moves into the air).
- Measure and compare the temperature of water when it exists as a solid to its temperature when it exists as a liquid.

- Investigate and recognize water can change from a liquid to a solid (freeze), and back again to a liquid (melt), as the result of temperature changes.
- Describe the changes in the physical properties of water (i.e. shape, volume) when frozen or melted.
- Predict and investigate the effect of heat energy (i.e. change in temperature, melting, evaporation) on objects and materials.
- Recognize that sound travels through different mediums (i.e. air, water, solids).
- Describe different ways to change the pitch of a sound (i.e. changes in size, such as length or thickness, and in tightness/tension of the source).
- Describe how the ear serves as a receiver of sound (i.e. sound vibrates eardrum).



Principles and Properties of Force and Motion

- Apply the use of an inclined plane (ramp) and/or lever to different real life situations in which objects are raised.

Processes and Interactions of the Earth's Systems

(Geosphere, Atmosphere, and Hydrosphere)

- Recognize liquid water can change into a gas (vapor) in the air.
- Recognize clouds and fog are made of tiny droplets of water.
- Recognize air is a substance that surrounds us, takes up space, and moves around us as wind.
- Describe clouds and precipitation as forms of water.

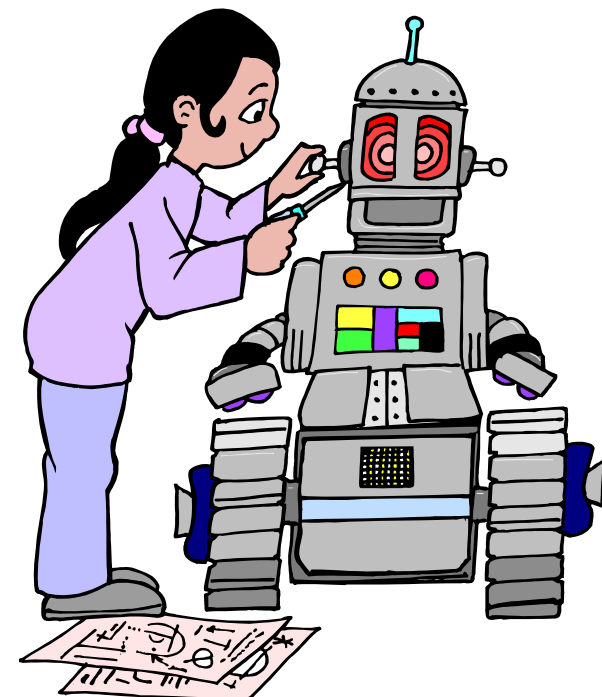


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PHYSICS