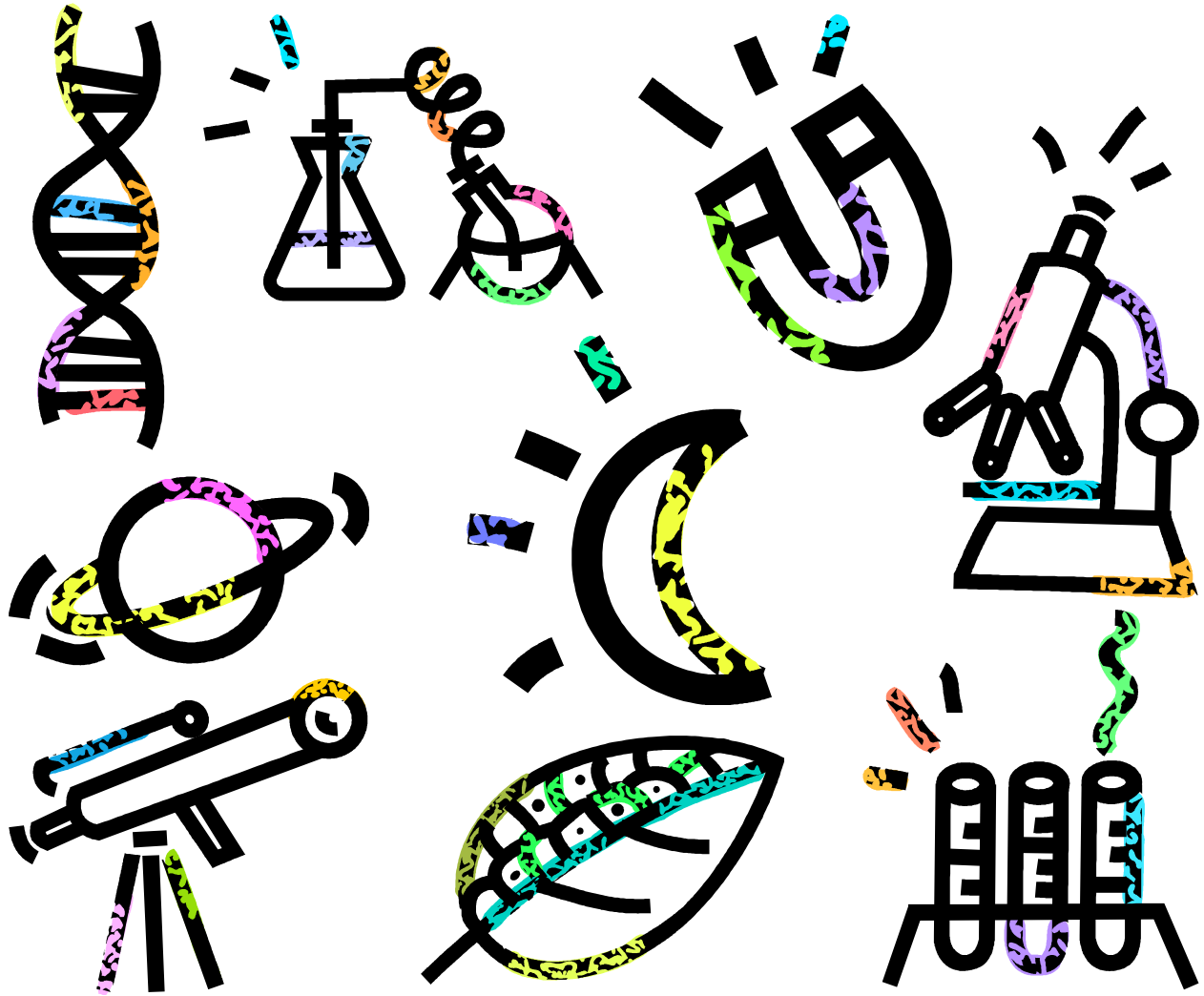


HOLDREGE PUBLIC SCHOOLS DISTRICT #69-0044



PK-12 SCIENCE CURRICULUM

Adopted January 11, 2010
Holdrege Board of Education

Holdrege Public Schools Science Curriculum

Mission Statement

The mission of the Holdrege Public Schools Science curriculum is to provide and develop problem strategies that challenge and stimulate opportunities for greater scientific understanding and continued learning.

Belief Statements

The Holdrege Public Schools Science program believes:

- in developing problem solving strategies for all students.
- in creating an awareness and understanding of the world around us.
- in stimulating life-long learning in all students.
- science knowledge is vital for human survival.
- exciting sciences prepare students for the future.

Purpose of the K-12 Science Curriculum

- To help students understand the natural world in an organized way
- To develop and foster inquisitive minds
- To learn science concepts, vocabulary, and inquiring skills
- To explore and conduct investigations
- To show how science relates to their own lives (real world)
- To learn problem solving skills

Best Possible Outcomes

- All topics covered
- Scope and sequence
- Challenge students
- Meeting needs of all students
- Meet the state standards
- Easier for substitutes
- Use a variety of teaching materials and methods
- Students with good problem solving skills
- Students who are interested in continuing on in science fields
- Variety of topics/knowledge
- Being responsible for what is taught at your level and liking it
- Well prepared
- Students that can think on their own
- Challenged – love of science

Science Exit Outcomes

1. Students will know a variety of information and scientific processes that will be meaningful for them in their future.
2. Awareness of resources to help solve problems.
3. Students should appreciate and understand the universe.
4. Student will continue to question their surroundings which will lead to discovery.

PK-12 Science Objectives

Pre-Kindergarten

1. The student will develop knowledge of the scientific process
2. The student will be able to develop scientific skills and methods.

Kindergarten

1. The student will be able to identify plants, including their parts and how they grow.
2. The student will learn about animals, their needs, life cycles and habitats.
3. The students will develop an understanding of physical science, including characteristics and properties of common materials.
4. The students will develop an understanding of earth and space, including weather, seasons, day and night, and caring for our earth.
5. The students will develop an understanding of personal health and safety.

1st Grade

1. The students will be able to recognize and identify the parts of plants and animals.
2. Students will be able to identify living and non-living things.
3. Students will be able to observe weather and seasonal changes.
4. Students will be able to recognize the earth's land and water.
5. Students will be able to develop an understanding of the objects in the sky.
6. Students will gain an understanding of personal health and safety.

2nd Grade

1. The student will be able to define the parts of a plant and what it needs to grow and change.
2. Students will demonstrate understanding of the food chain, how animals are classified and life cycles of animals.
3. The students will be able to identify animals of long ago and compare the characteristics to animals of today.
4. The student will be able to identify forms of matter and measure changes in matter.
5. The student will be able to identify different forms of energy and a chemical versus a physical change.
6. The students will be able to identify the properties and uses of magnets.

3rd Grade

1. Students will be able to classify plants and animals, identify appropriate habitats, and illustrate life cycles.
2. Students will be able to demonstrate and analyze length, mass, volume, and temperature.
3. Students will be able to describe, identify, and assemble simple machines.
4. Students will be able to recognize sources of sound and light and describe how each travels.
5. Students will be able describe the earth and moon, identify and illustrate their position in space, and demonstrate how they revolve and rotate around the sun.
6. Students will be introduced to the organs and their functions and systems of the human body.

4th Grade

1. The student will be able to explain the types of rocks, minerals, and the structure of the earth.
2. The student will be able to explain the relationship of the earth to the solar system.
3. The student will be able to demonstrate the relationship between water and weather and preventing pollution of water resources.
4. The student will be able to demonstrate the relationship between matter, light, sound, and energy.
5. The student will be able to classify the organisms in the world as living things (plants and animals).

5th Grade

1. By the end of fifth grade, student will develop the abilities needed to do scientific inquiry.
2. By the end of fifth grade, students will develop an understanding of motion and forces.
3. By the end of fifth grade, students will develop an understanding of the structure and function in living systems.
4. By the end of fifth grade, students will develop an understanding of the structure of the earth by discovering the Earth's layers and movement of those layers.
5. Students will develop an understanding of diversity and adaptations of organisms.
6. Student will develop an understanding of relationships among populations, resources, and environments.
7. By the end of fifth grade students will develop an understanding of natural hazards.
8. Students will develop an understanding of relationships among populations, resources, and environments.
9. Students will develop an understanding of the risks of illegally disposing of hazardous waste and discover the benefits of good conservation.

6th Grade

1. The student will be introduced to and describe fossils briefly, determined by analysis of the history of paleontology, and of extinction.
2. The student will be introduced to and be able to describe the properties of elements, atoms in relationship to molecules in compounds as involved in different types of reactions.
3. The student will be able to differentiate between types of electricity and magnetism, demonstrate how electricity is produced and used.
4. The student will be introduced to and be able to recognize the solar system, and discriminate among stars, galaxies, quasars, and other phenomena in the universe by what measurements are used.
5. The student will be introduced to and be able to describe the origin of the earth, and generalize and describe the process of plate tectonics relating to rock types.
6. The students will be introduced to and be able to compare and contrast weather to climate, analyzing air movements, in types of storms using modern technology.
7. The students will be able to demonstrate and describe the basic fundamentals of physics.
8. The students will describe the general view of the methods of proper hygiene, drug awareness, and making the correct choices.

7th Grade

1. The students will be able to compare and contrast structure and functions of plant and animal cells, and describe the movement of materials into and out of a cell.
2. The students will know the steps in the scientific method and apply it to experiments and problems solving.
3. The students will be able to identify the parts of a microscope and use the microscope to study slides properly.
4. The students will learn the six kingdoms of scientific classification and be able to classify organisms based on evolutionary relationships.
5. The students will learn the structure, function, and life cycle of viruses and bacteria and learn helpful and harmful characteristics of both.
6. The students will recognize characteristics of protists and discuss their interaction with other organisms.
7. Students will be able to identify basic characteristics of fungi and understand its ecological significance.
8. The students will be able to differentiate seed and seedless plants and analyze adaptations necessary for life on land.
9. Students will be able to classify and describe characteristics of animals ranging from simple invertebrates to the most complex vertebrates and be able to recognize common examples of each phyla.
10. The students will discover the interactions and connections among living organisms.

8th Grade

1. Students will be able to demonstrate the use of weather equipment, analyze data, and be able to interpret weather maps and reports.
2. Students will be able to describe the objects and motions of the objects in our solar system and the night sky, and analyze their apparent motions.
3. Students will recognize people and events in the history of space exploration.
4. Students will understand the structure of the earth, including layers, rocks types and formation, and analyze the processes that create volcanic and earthquake activity.
5. Students will demonstrate an understanding of the scientific process by designing and carrying out an individual experiment and analyzing the data.
6. Students will be able to analyze everyday products to identify common elements and compounds found in them, and distinguish the difference between physical and chemical properties.
7. Students will understand the processes in the water cycle, and factors affecting the quality of our water and soil.

Physical Science Curriculum 9th Grade

1. Students understand the Scientific Method.
2. Students will identify matter and identify states of matter.
3. Students will learn the basics of chemical and nuclear reactions.
4. Students will learn the properties of acids and bases.
5. Students will calculate motion and forces.
6. Students will apply the Law of Conservation of Energy.
7. Students will distinguish between mechanical and electromagnetic waves.
8. Students will review topics in Earth Science.

Basic Biology Curriculum 9-10th Grade

1. Students will develop and practice abilities needed to do scientific method.
2. Students will develop an understanding of the cell.
3. Students will develop an understanding of the molecular basis of heredity.
4. Students will develop an understanding of the theory of biological evolution.
5. Students will develop an understanding of the interdependence of organisms.
6. Students will develop an understanding of matter, energy, and organization in living systems.
7. Students will develop an understanding of the behavior of organisms.
8. Students will learn the major components and functions of several human body systems.

Biology Curriculum 10th Grade

1. Students will have an understanding of the field of biology and the chemistry of life. Techniques used by scientists and the scientific method will be understood.
2. Students will understand interactions of living things in the biosphere.
3. Students will understand cell structure and function and cell growth and division.
4. Students will have an understanding of DNA and RNA and their role in genetics.
5. Understand natural selection and Darwin's theory of evolution.
6. Students will understand the relationship between all the systems of the human body.

Chemistry Curriculum 11-12th Grade

1. Students will use measurement and data, along with the scientific method.
2. Students will learn the properties of matter from atoms to electrons.
3. Students will use the periodic table to make predictions.
4. Students will learn how atoms and ions bond in compounds.
5. Students will do quantitative calculations with chemical reactions using moles.
6. Students will use the gas laws.
7. Students will apply the concept of equilibrium.
8. Students will learn the chemistry of acids and bases.

Physics Curriculum 12th Grade

1. Students apply the Scientific Method graphically and mathematically.
2. Students will learn and apply constant velocity and constant acceleration.
3. Students will learn and apply Newton's three laws of motion.
4. Students will do energy and momentum transformation calculations.
5. Students will learn the laws associated with fluids.
6. Students will learn advanced properties of mechanical and electromagnetic waves.

Anatomy Curriculum 12th Grade

1. For each system studied, including tissues, integumentary, skeletal and joints, muscular, nervous, cardiovascular, digestive, and reproductive and pregnancy, students will understand the structure of organs that make up the system and how they function.
2. Homeostatic imbalances and diseases associated with each system of the body will be studied.
3. Students will understand the developmental aspects to each system studied from the embryonic stages through old age.

Holdrege Public Schools Science Curriculum Preschool

Performance Objective

The student will develop knowledge of the scientific process.

List of Learnings – I want the student to learn...

- To develop knowledge of the scientific process
 - To show interest in active investigation
 - To begin to make comparisons among objects that have been observed
 - To describe or represent a series of events in the correct sequence
- To demonstrate understanding of simple cause and effect relationships
- To show interest in measurement of time, length, distance, and weight
- To develop an increased ability to observe and discuss things that are common and things that are different

Assessment

Teacher observation of child's active participation
Preschool Child Observation Record (COR)

State Standards Met:

NE Early Learning Guidelines SCI. PK. 2.1.1, 2.1.2, 2.1.3, 2.2, 2.3, 2.4

Holdrege Public Schools Science Curriculum Preschool

Performance Objective

The student will be able to develop scientific skills and methods.

List of Learnings – I want the student to learn...

- To develop scientific skills and methods
 - To make observations and describe objects and processes in the environment
 - To begin to make comparisons between objects that have been observed
 - To begin to find answers to questions through active investigation
- To use sentences that include two or more ideas with descriptive details
- To use senses, materials, events in nature, and the environment to investigate and expand knowledge

Assessment

Teacher observation of child's active participation
Preschool Child Observation Record (COR)

State Standards Met:

NE Early Learning Guidelines SCI.PK. 1.1.1, 1.1.2, 1.1.3, 1.2, 1.3

Holdrege Public Schools Science Curriculum Kindergarten

Performance Objective

The student will be able to identify plants, including their parts and how they grow.

List of Learnings – I want the student to learn...

- Life Cycles (sequencing the stages of growth)
- Parts of plants and their function (roots, stems, flowers, leaves)
- Needs (water, sunlight, soil)
- Develop an understanding that plants are living things.
- How plants change during the seasons of the year
- Measurement, observation, and comparison of physical growth, size, and change

Assessment

- Drawings/writing
- Projects
- Experiments
- Teacher observation

State Standards Met:

1.1.4.1.A, 1.1.4.1.B, 1.1.4.1.C, 1.1.4.2.A, 1.1.1.3.A, 1.1.1.3.B, 1.1.1.3.C, 1.1.1.3.E, 1.1.5.3.B

Holdrege Public Schools Science Curriculum

Kindergarten

Performance Objective

The student will learn about animals, their needs, life cycles and habitats.

List of Learnings – I want the student to learn...

- Life cycles (how animals change as they grow)
 - How offspring resemble their parents
 - Needs (food, water, shelter, air)
 - Habitats (land and water)
 - Characteristics
 - *Body coverings, what they eat and how they move, adapt to environment for survival
- Comparing and sorting by characteristics

Assessment

- Teacher observation
- Discussion
- Student demonstrations
- Drawing/writing
- Projects
- Experiments
- Science Compass Learning Path

State Standards Met:

1.1.1.1.B 1.1.1.3.B 1.1.1.4.B 1.1.4.1.B 1.1.4.1.D 1.1.4.1.E 1.1.4.2.A
1.1.4.2.B 1.1.1.3.C

Holdrege Public Schools Science Curriculum

Kindergarten

Performance Objective

The students will develop an understanding of physical science, including characteristics and properties of common materials.

List of Learnings – I want the student to learn...

- Characteristics of common materials (e.g., paper, wood, metal, and wool)
 - * Shape, texture, composition, size, weight
- Sort and classify materials according to these characteristics.
- Observe and describe properties of common materials (e.g., how they will sink or float in water, mix, dissolve, or not dissolve in various liquids).
- Observe and classify materials as solid, liquid, or gas.
- Experiment with magnets and their effect on various common materials
- Use one or more of the five senses to observe and describe objects.
- Movement
 - *Push, pull, slide, roll
- Machines/Tools
- Technology used with various occupations

Assessment

- Teacher observation
- Demonstrations
- Experiments
- Drawings/writing
- Projects
- Discussion

State Standards Met:

1.1.1.4.A 1.1.1.1.A 1.1.3.1.B 1.1.6.2.A 1.1.6.2.B 1.1.1.1.B 1.1.2.1
1.1.3.1.C 1.1.2.1.C 1.1.3.1.A 1.1.6.1.A

Holdrege Public Schools Science Curriculum Kindergarten

Performance Objective

The students will develop an understanding of earth and space, including weather, seasons, day and night, and caring for our earth.

List of Learnings – I want the student to learn...

- Characteristics of seasons
- Characteristics of earth materials (rocks, soil, water)
- Day and Night (objects in the sky, sun, moon, stars)
- Weather (graph daily weather, discover how it effects their daily living, learn how it affects plants and animals)
 - * Use thermometers
- Protecting our environment, Earth Day, reduce, reuse, recycle

Assessment

- Teacher observation
- Drawings and writing
- Experiments
- Models and reports/discussion
- Graphing

State Standards Met:

1.1.5.1.A	1.1.5.1.B	1.1.5.2.A	1.1.5.2.B	1.1.5.3.A	1.1.5.3.B
1.1.7.2.A	1.1.6.2.A				

Holdrege Public Schools Science Curriculum

Kindergarten

Performance Objective

The students will develop an understanding of personal health and safety.

List of Learnings – I want the student to learn...

- Safety rules for home and school
- Dental Health (proper brushing, nutritious foods, avoiding sweets)
- Nutrition (food groups, healthy diet,)
- Drug/alcohol/tobacco awareness
- Heart health (exercise, good food, use stethoscopes, what the heart does)
- Awareness of exceptionalities (understanding, tolerance)
- Hygiene (proper sneezing and coughing techniques, hand washing and sanitizing, importance of bathing, and combing their hair, head lice prevention)
- Body awareness (body parts and their functions, importance of exercise)

Assessment

- Teacher Observation
- Drawings and writing
- Class discussion and response

State Standards Met:

1.1.7.1.A 1.1.7.1.B 1.1.7.1.C 1.1.7.1.D

Holdrege Public Schools Science Curriculum

1st Grade

Performance Objective

The students will be able to recognize and identify the parts of plants and animals.

List of Learnings – I want the student to learn to...

- Label and diagram the parts of a plant—roots, stem, flower, and leaves
- Read and share books about plants and animals.
- Observe plants and animals.
- Discuss characteristics of animal—body covering, diet, locomotion, environment,
- Life Cycles—how they change as they grow.

Assessment

Make a drawing of a plant and label its parts.
Group animals by their characteristics.

State Standards Met:

1.1.2 1.1.3 1.2.1 1.4.1 1.4.2 1.6.1

Holdrege Public Schools Science Curriculum

1st Grade

Performance Objective

Students will be able to identify living and non-living things.

List of Learnings – I want the student to learn...

- Discuss living and non-living thing
- Read a variety of books about living and non-living things
- Classify and chart living and non-living things

Assessment

Teacher observation
Group activity with students making a chart of living and non-living things

State Standards Met:

1.1.1 1.1.2 1.1.4 1.2.1 1.4.1 1.4.

Holdrege Public Schools Science Curriculum

1st Grade

Performance Objective

Students will be able to observe weather and seasonal changes.

List of Learnings – I want the student to learn...

- Monitor daily temperature and read thermometer
- Observe and discuss seasonal changes
- Predict, report, and record weather conditions

Assessment

Teacher observation
Students record daily weather and temperature
Artwork showing weather and seasonal change

State Standards Met:

1.1.1 1.2.1 1.5.3 1.6.1 1.6.2 1.8.1

Holdrege Public Schools Science Curriculum

1st Grade

Performance Objective

Students will be able to recognize the earth's land and water.

List of Learnings – I want the student to learn...

- Identify, compare and contrast landforms—hill, mountain, plains
- Identify characteristics of Earth's materials—rock, soil
- Identify, compare and contrast bodies of water—ocean, river
- Discuss natural resources and our responsibility to reduce, reuse, and recycle
- Use and label globe and maps—equator, North and South pole (label)—discuss continents and oceans

Assessment

Teacher observation
Draw and label landforms and bodies of water

State Standards Met:

1.1.1 1.1.2 1.3.1 1.5.1 1.5.3 1.7.2

Holdrege Public Schools Science Curriculum

1st Grade

Performance Objective

Students will be able to develop an understanding of the objects in the sky.

List of Learnings – I want the student to learn...

- Recognize objects in the sky (sun, moon, stars, and planets)
- Draw and label solar system and activity with sun and planets in order
- Investigate that the sun provides heat and light
- Read a variety of books about the Solar System and contributions made by men and women

Assessment

Label objects in the sky

State Standards Met:

1.5.2 1.8.1

Holdrege Public Schools Science Curriculum

1st Grade

Performance Objective

Students will gain an understanding of personal health and safety.

List

- Identify safety rules for home and school—Fire safety
- Engage in personal care that will maintain and improve health.
- Describe a healthy diet.
- Explain that substances can benefit the way the body functions—label brain, lungs, heart, liver, stomach, small and large intestine.

Assessment

Teacher observation
Draw a healthy meal
Make a list of safety rules
Participate in red ribbon week activities

State Standards Met:

1.7.1

Holdrege Public Schools Science Curriculum

2nd Grade

Performance Objective

The student will be able to define the parts of a plant and what it needs to grow and change.

List of Learnings – I want the student to learn...

- Parts of a plant-roots, stem, fruit, flower, leaves and their purpose
- life cycle of a plant-seed, seedling, embryo, sprout, adult plant
- plants' needs-water, sunlight, nutrients

Assessment

teacher observation
chapter tests
activity packets

State Standards Met:

4.1.1a, 4.1.1b, 4.2.1a, 4.2.1b, 4.4.1a, 4.4.1b, 4.4.1.c, 4.4.2a

Holdrege Public Schools Science Curriculum

2nd Grade

Performance Objective

Students will demonstrate understanding of the food chain, how animals are classified and life cycles of animals.

List of Learnings – I want the student to learn...

- Classify animals into basic animal groups-fish, birds, amphibians, reptiles, mammals, insects, spiders
- Discuss parts of a food chain-predator, prey

Assessment

chapter tests
activity packets
teacher observation

State Standards Met:

4.4.1A, 4.4.1B, 4.4.2A, 4.4.3A

Holdrege Public Schools Science Curriculum

2nd Grade

Performance Objective

The students will be able to identify animals of long ago and compare the characteristics to animals of today.

List of Learnings – I want the student to learn...

- how a fossil is formed-animal dies, decays, bones left behind, buried in layers
- characteristics of dinosaurs-variety of sizes, plant & meat eaters, teeth, where lived
-

Assessment

reports
tests
activity packets
teacher observation

State Standards Met:

4.5.1d 4.5.3a 4.2.1a

Holdrege Public Schools Science Curriculum

2nd Grade

Performance Objective

The student will be able to identify forms of matter and measure changes in matter.

List of Learnings – I want the student to learn...

- classify and compare objects with different mass and size
- identify and describe properties of matter-size, color, sink, float, texture, temperature
- recognize and describe how matter changes-physical & chemical changes

Assessment

teacher observation
activity packets
tests

State Standards Met:

4.3.1a, 4.3.1b, 4.3.1c, 4.2.1a, 4.2.1b, 4.2.1c, 4.3.1a, 4.3.1b

Holdrege Public Schools Science Curriculum

2nd Grade

Performance Objective

The student will be able to identify different forms of energy and a chemical versus a physical change.

List of Learnings – I want the student to learn...

- Properties of light, heat, electrical and sound energy
- differences between chemical and physical change

Assessment

teacher observation
activity packets
test

State Standards Met:

4.2.1.a 4.2.1b 4.2.1c 4.3.1c 4.3.3a 4.3.3b

Holdrege Public Schools Science Curriculum

2nd Grade

Performance Objective

The students will be able to identify the properties and uses of magnets.

List of Learnings – I want the student to learn...

- North & South Poles of a magnet
- Which poles attract and repel
- Uses of magnets in real life
- Magnetic field
- Different sizes and strengths of magnets

Assessment

teacher observation,
activity packets
tests

State Standards Met:

4.2.3a 4.2.3b 4.3.3f 4.2.1a 4.2.1b 4.2.1c

Holdrege Public Schools Science Curriculum

3rd Grade

Performance Objective

Students will be able to classify plants and animals, identify appropriate habitats, and illustrate life cycles.

List of Learnings – I want the student to learn...

- Classify plants and animals
- Habitats
- Life Cycles

Assessment

Tests
Teacher Observation

State Standards Met:

4.4.1 4.4.2 4.4.3 4.1.2 4.2.1 4.8.1 4.1.1

Holdrege Public Schools Science Curriculum

3rd Grade

Performance Objective

Students will be able to demonstrate and analyze length, mass, volume, and temperature.

List of Learnings – I want the student to learn to...

- Use correct tools to measure matter
- Define matter, mass, length, volume, and temperature
- Properties of matter
- Compare states of matter

Assessment

Tests
Teacher Observation

State Standards Met:

4.2.1, 4.3.1, 4.1.4, 4.6.2, 4.8.1

Holdrege Public Schools Science Curriculum

3rd Grade

Performance Objective

Students will be able to describe, identify, and assemble simple machines.

List of Learnings – I want the student to learn...

- Define terms
- Identify simple machines
- Demonstrate and assemble simple machines and how they make life easier

Assessment

Tests (written and/or performance)
Teacher Observation

State Standards Met:

4.1.2, 4.1.4, 4.2.1, 4.3.2, 4.6.1, 4.6.2, 4.6.3, 4.7.4, 4.8.1

Holdrege Public Schools Science Curriculum

3rd Grade

Performance Objective

Students will be able to recognize sources of sound and light and describe how each travels.

List of Learnings – I want the student to learn...

- Define terms
- Demonstrate characteristics of sound and light

Assessment

Tests (written and/or performance)
Teacher Observation

State Standards Met:

4.2.1, 4.3.2, 4.6.1, 4.6.2, 4.6.3, 4.7.4

Holdrege Public Schools Science Curriculum

3rd Grade

Performance Objective

Students will be able describe the earth and moon, identify and illustrate their position in space, and demonstrate how they revolve and rotate around the sun.

List of Learnings – I want the student to learn to...

- Define terms
- Activities to show relative size and motion
- Moon phases
- Compare Earth and Moon
- Aeronautics

Assessment

Tests (written and/or performance)
Teacher Observation

State Standards Met:

4.1.1, 4.1.2, 4.3.1, 4.3.2, 4.5.2, 4.5.3, 4.6.2, 4.7.4, 4.8.1

Holdrege Public Schools Science Curriculum

3rd Grade

Performance Objective

Students will be introduced to the organs and their functions and systems of the human body.

List of Learnings – I want the student to learn...

- Body systems and what they do-organs and their functions in the body.
- Explain how the body uses food-basic nutrition.
- Understand how science and technology are used in the health care system.
- Careers in health care.

Assessment

Tests
Teacher Observation
Projects
Diagrams

State Standards Met:

4.1.1, 4.1.2, 4.7.1, 4.7.2, 4.7.4, 4.8.1

Holdrege Public Schools Science Curriculum

4th Grade

Performance Objective

The student will be able to explain the types of rocks, minerals, and the structure of the Earth.

List of Learnings – I want the student to learn...

- Rocks
- Minerals
- Soil
- Earth Structure

Vocabulary Terms:

- outer core, luster, magma, earthquake, weathering, erosion, deposition, magnitude, river delta, mountain range, lava, sedimentary rock, glacier, rock cycle, tremors, metamorphic rock, core, mantle, crust, igneous rock, Earth, mineral, seismograph, fossil, fault, erractic, rock

Assessment

State standard 5.5.1
Teacher-made assessments
Basal Assessments

State Standards Met:

5.5.1, 4.5.1, 4.5.2, 4.5.3, 4.1.2, 4.1.3, 4.2.1, 4.8.1

Holdrege Public Schools Science Curriculum

4th Grade

Performance Objective

The student will be able to explain the relationship of the earth to the solar system.

List of Learnings – I want the student to learn...

- rotate
- axis
- revolve
- orbit
- star
- moon
- sun
- planets
- solar system
- constellations

Assessment

teacher-made tests
performance assessments
teacher observations
Basal assessments

State Standards Met:

4.5.1, 4.5.2, 4.5.3, 4.1.2, 4.1.3, 4.2.1, 4.8.1

Holdrege Public Schools Science Curriculum

4th Grade

Performance Objective

The student will be able to demonstrate the relationship between water and weather and preventing pollution of water resources.

List of Learnings – I want the student to learn...

- Water Cycle
- Oceans
- Weather
- Climate

Vocabulary Terms:

ground water, water vapor, atmosphere, evaporation, condensation, precipitation, water cycle, water conservation, irrigation, thermometer, humidity, climate, weather

Assessment

Teacher-made assessments
Basal assessments

State Standards Met:

4.1.1, 4.5.1, 4.1.3, 4.2.1, 4.7.2, 4.7.3, 4.7.4, 7.8.1

Holdrege Public Schools Science Curriculum

4th Grade

Performance Objective

The student will be able to demonstrate the relationship between matter, light, sound, and energy.

List of Learnings – I want the student to learn...

- Solids, liquids, gas
- Changes in Matter (Physical and Chemical)
- Measure Matter
- Heat
- Light
- Sound
- Simple/Compound Machines
- Batteries/Circuits
- Magnets
- Static Electricity

Vocabulary Terms:

kinetic energy, physical change, chemical change, energy, friction, heat energy, magnets, simple machine, compound machine, lever, pulley, wheel and axel, incline plane, wedge, heat, conduction, convection, radiation, conductors, insulators, parallel circuit, series circuit, current electricity, pole, magnetic field

Assessment

Teacher-made assessments
Basal assessments

State Standards Met:

5.3.2, 4.3.2, 4.3.1, 4.1.4, 4.2.1, 4.3.3, 4.6.1, 4.6.2, 4.6.3, 4.7.2, 4.8.1

Holdrege Public Schools Science Curriculum

4th Grade

Performance Objective

The student will be able to classify the organisms in the world as living things (plants and animals).

List of Learnings – I want the student to learn...

- Cells
- Classifying Organisms
- Organisms of the past
- Ecosystems
- Plant Parts
- Plant Growth and Reproduction
- Animals and their environment
- Life Cycles

Vocabulary Terms:

food chain, food web, habitat, producer, consumer, decomposer, community, population, ecosystem, transpiration, photosynthesis, respiration

Assessment

Teacher-made assessments
Basal assessments

State Standards Met:

4.4.1, 4.4.2, 4.1.2, 4.2.1, 4.4.3, 4.6.3, 4.7.2, 4.8.1

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

By the end of fifth grade, student will develop the abilities needed to do scientific inquiry.

List of Learnings – I want the student to learn...

- through lab activities, to demonstrate the process skills of science i.e.(Inquiry, observations, measurements, inferring, classifying, communicating, controlling variables).
- to identify, in order, the steps of the scientific method and demonstrate the use of the scientific method in lab work.

Assessment

Lab sheets
Unit tests
Research report
STARS Test

State Standards Met:

5.2.1

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

By the end of fifth grade, students will develop an understanding of motion and forces.

List of Learnings – I want the student to learn...

- to investigate and describe the motion of an object by its position, direction of motion and speed.
- to use cars and weights to study force and motion in lab activities.
- to identify the laws of motion and how they work.

Assessment

Lab activity sheets to show understanding
Unit Test
STARS Test

State Standards Met:

5.3.2

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

By the end of fifth grade, students will develop an understanding of the structure and function in living systems.

List of Learnings – I want the student to learn...

- the body systems and cell structure from the text book.
- to create a power point presentation with partners about body systems.
- to successfully complete a cell structure lab.

Assessment

Power Point
Unit test
STARS Test

State Standards Met:

5.4.1

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

By the end of fifth grade, students will develop an understanding of the structure of the earth by discovering the Earth's layers and movement of those layers.

List of Learnings – I want the student to learn...

- to identify the characteristics and effects of erosion.
- to identify the characteristics of volcanoes.
- to identify the characteristics of minerals.
- to successfully complete labs working with minerals
- to learn Earth layers using models and drawings

Assessment

Lab activity to identify and test hardness of minerals.
Unit Test
STARS Test

State Standards Met:

5.5.1

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

Students will develop an understanding of diversity and adaptations of organisms.

List of Learnings – I want the student to learn...

- the Biomes of the world through the text book and videos.
- to successfully complete activities showing how animals and plants adapt to the world.

Assessment

Unit Test

State Standards Met:

8.4.5

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

Student will develop an understanding of relationships among populations, resources, and environments.

List of Learnings – I want the student to learn...

- to define populations, resources, and environments.
- to create a mobile for understanding biomes.
- to define vocabulary relative to populations, resources, and environments.
- to participate in a hands on tactile activity, OH Deer, to show understanding of populations and resources.

Assessment

Mobile
Unit Test

State Standards Met:

8.7.2

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

By the end of fifth grade students will develop an understanding of natural hazards.

List of Learnings – I want the student to learn...

- to investigate and describe the effect of natural hazards on the environment (e.g., earthquakes, landslides, wildfires, floods, and storms).
- to investigate and describe human activities (e.g., urban growth, land use, and waste disposal) which can accelerate many natural changes.
- to demonstrate an awareness of flooding , land use, and waste control.

Assessment

Find a solution for the water problem with partners in their lab.

State Standards Met:

8.7.3

Holdrege Public Schools Science Curriculum

5th Grade

Performance Objective

Students will develop an understanding of the risks of illegally disposing of hazardous waste and discover the benefits of good conservation.

List of Learnings – I want the student to learn...

- to analyze a type of hazard (e.g., natural, chemical, or biological) and evaluate the options for reducing or eliminating human risk
- to participate in a simulation activity of a town that has water supply damage and determine alternatives to fix the problem.

Assessment

Find a solution for the water problem with partners in their lab

Students will find a point source contamination and a contamination area in “Fruitvale” and work together to write a clean-up plan for the area.

State Standards Met:

8.7.4

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The student will be introduced to and describe fossils briefly, determined by analysis of the history of paleontology, and of extinction.

List of Learnings – I want the student to learn...

- Fossils
- Geologic Time
- Analysis and synthesis
- Scientific Method in learning Geologic time
- Rocks
- Landforms

Assessment

Teacher observation
chapter questions
notes
chapter tests
experiments

State Standards Met:

8.1.1, 8.2.1, 8.4.5, 8.5.2, 8.8.2

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The student will be introduced to and be able to describe the properties of elements, atoms in relationship to molecules in compounds as involved in different types of reactions.

List of Learnings – I want the student to learn...

- Elements
- Atoms in elements
- Compounds and elements
- Do analysis and synthesis
- Periodic Table
- Acids and Bases
- Chemical change
- Fission, and fusion

Assessment

Teacher observations
chapter questions
notes
chapter tests
review games
experiments
verbal participation in class

State Standards Met:

8.1.1, 8.1.2, 8.2.1, 8.3.1, 8.4.5

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The student will be able to differentiate between types of electricity and magnetism, demonstrate how electricity is produced and used.

List of Learnings – I want the student to learn...

- Static Electricity
- Current electricity
- Types of circuits
- Series and Parallel
- Motors, fuses, power sources
- Computers light and energy usage

Assessment

Teacher observation
Discussion
chapter questions
notes
chapter tests
review games
experiments
verbal participation in class

State Standards Met:

8.1.3, 8.3.3, 8.6.2, 8.7.5, 8.8.2

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The student will be introduced to and be able to recognize the solar system, and discriminate among stars, galaxies, quasars, and other phenomena in the universe by what measurements are used.

List of Learnings – I want the student to learn...

- Solar System
- Planets, Sun, Moon, asteroids
- Galaxies
- Nebula
- Astronomical Instruments
- Future Man Space flight

Assessment

Teacher observation, discussion, chapter questions, notes, chapter tests, review games, experiments, verbal participation in class

State Standards Met:

8.3.1, 8.3.2, 8.5.3, 8.6.2, 8.8.1

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The student will be introduced to and be able to describe the origin of the earth, and generalize and describe the process of plate tectonics relating to rock types.

List of Learnings – I want the student to learn...

- Earth
- Plate tectonics
- Continental Drift
- Volcanoes
- Faults, focus, earthquakes
- Seismographs
- Magma

Assessment

Teacher observation
Discussion
chapter questions
notes
chapter tests
review games
experiments
verbal participation in class

State Standards Met:

8.5.1, 8.7.4, 8.7.3, 8.4.3

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The students will be introduced to and be able to compare and contrast weather to climate, analyzing air movements, in types of storms using modern technology.

List of Learnings – I want the student to learn...

- Climate control
- Weather maps
- Components of the weather
- Climate
- Greenhouse Effect
- Instruments of Weather
- Tornado Safety
- Hurricanes

Assessment

Teacher observation, discussion, chapter questions, notes, chapter tests, review games, experiments, verbal participation in class.

State Standards Met:

8.1.2, 8.3.3, 8.5.2, 8.7.3

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The students will be able to demonstrate and describe the basic fundamentals of physics.

List of Learnings – I want the student to learn...

- Speed and Distance
- Force and Motion
- Acceleration and Momentum
- Energy and Work
- Levers
- Incline Planes

Assessment

Teacher observation, discussion, chapter questions, notes, chapter tests, review games, experiments, verbal participation in class.

State Standards Met:

8.1.3, 8.2.1, 8.3.2, 8.6.2, 8.7.5

Holdrege Public Schools Science Curriculum

6th Grade

Performance Objective

The students will describe the general view of the methods of proper hygiene, drug awareness, and making the correct choices.

List of Learnings – I want the student to learn...

- Methods of Hygiene
- Teeth, Eyes, keeping clean
- Alcohol
- Tobacco
- Aids
- Sexuality

Assessment

Teacher observation, discussion, chapter questions, notes, chapter tests, review games, experiments, verbal participation in class.

State Standards Met:

8.7.4, 8.4.1, 8.4.3

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

The students will be able to compare and contrast structure and functions of plant and animal cells, and describe the movement of materials into and out of a cell.

List of Learnings – I want the student to learn...

- Parts of a plant cell
- Parts of an animal cell
- Functions of cell organelles
- How diffusion moves materials into and out of a cell
- How osmosis moves materials into and out of a cell

Assessment

Teacher tests
lab experiments
standard tests
picture identification,
class discussion

State Standards Met:

8.4.1, 8.4.3

Holdrege Public Schools Life Science Curriculum 7th Grade

Performance Objective

The students will know the steps in the scientific method and apply it to experiments and problems solving.

List of Learnings – I want the student to learn...

- the step of the scientific method in order.
- to design an experiment that correctly uses the scientific method to solve a problem.
- to solve problems by applying the scientific method to a given problem
- to tell whether data is acceptable or not.
- how to collect and evaluate data.
- how to uses scientific tools.
- the proper way to write a hypothesis.

Assessment

design an experiment
teacher test
class discussions
standard tests

State Standards Met:

8.1.2, 8.2.1,

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

The students will be able to identify the parts of a microscope and use the microscope to study slides properly.

List of Learnings – I want the student to learn...

- how to focus a microscope.
- how to properly prepare a slide.
- the parts of the microscope.
- the different kinds of microscopes.
- how microscopes help us collect data.
- the limits of a microscope.

Assessment

classroom observations
tests
class discussion
hands on test

State Standards Met:

8.1.2, 8.2.1, 8.1.3

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

The students will learn the six kingdoms of scientific classification and be able to classify organisms based on evolutionary relationships.

List of Learnings – I want the student to learn...

- the names of the six kingdoms.
- how the kingdoms are defined and separated.
- the definition of evolution.
- how organisms are related by evolution.
- how organism change over time.
- what extinct organisms were like and how they lived.

Assessment

Teacher test, class discussion, teacher observation, chapter questions

State Standards Met:

8.4.1, 8.4.2, 8.4.5

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

The students will learn the structure, function, and life cycle of viruses and bacteria and learn helpful and harmful characteristics of both.

List of Learnings – I want the student to learn...

- the parts of a virus.
- how viruses reproduce.
- how to prevent virus infections.
- the parts of a bacteria.
- how bacteria reproduce.
- the different types of bacteria.
- how bacteria cause disease.
- how to stop bacteria growth.
- types of diseases they cause.
- shapes of bacteria.

Assessment

class discussion
teacher tests
standard tests
class room observation
making a model of bacteria.

State Standards Met:

8.4.1, 8.4.2, 8.4.3, 8.4.5

Holdrege Public Schools Life Science Curriculum 7th Grade

Performance Objective

The students will recognize characteristics of protists and discuss their interaction with other organisms.

List of Learnings – I want the student to learn...

- the groups of protists.
- how protists get their food.
- how protists interact with other organism in their environment.
- how they reproduce.
- diseases they cause.
- how they affect food chains.
- how they have advanced over bacteria.
- names for relationships they have with other organism.

Assessment

Lab to observe protists
student made drawings
standard tests
teacher tests
class discussions

State Standards Met:

8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.6.1

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

Students will be able to identify basic characteristics of fungi and understand its ecological significance.

List of Learnings – I want the student to learn...

- characteristics of fungi.
- the types of fungi.
- how fungi affects the environment.
- uses of fungi by humans.
- how to identify the groups of fungi.
- methods fungi use to obtain food.
- how fungi reproduce.

Assessment

Standard tests
teacher made tests
class room observations
questions and worksheets
group discussions
laboratory activities

State Standards Met:

8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.7.4, 8.7.5

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

The students will be able to differentiate seed and seedless plants and analyze adaptations necessary for life on land.

List of Learnings – I want the student to learn...

- how to identify seed and seedless plants.
- how plants evolved to live on land.
- how plants move material inside the plant.
- how plants move material into and out of the plant.
- how plants produce food.
- how the process of photosynthesis works.
- how plants reproduce both sexually and asexually.
- how plants affect human life.
- how plants were changed into fossil fuels.

Assessment

state standard tests
teacher tests
class discussion
laboratory activities
teacher observations
work sheets

State Standards Met:

8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.7.2,

Holdrege Public Schools Life Science Curriculum

7th Grade

Performance Objective

Students will be able to classify and describe characteristics of animals ranging from simple invertebrates to the most complex vertebrates and be able to recognize common examples of each phyla.

List of Learnings – I want the student to learn...

- Characteristics of animals.
- How animals are classified into groups.
- Method of reproduction animals use.
- How animals are adapted to their environment.
- How animals move.
- How animals have evolved to fit into their environment.
- How animals interact with the environment.
- The life cycles of animals.

Assessment

state standard tests
teacher tests
class room observations
laboratory observations
class discussion
book questions

State Standards Met:

8.4.1, 8.4.2, 8.4.3, 8.4.4, 8.4.5, 8.7.2

Holdrege Public Schools Life Science Curriculum 7th Grade

Performance Objective

The students will discover the interactions and connections among living organisms.

List of Learnings – I want the student to learn...

- how living organisms interact.
- how living things affect and are affected by their environment.
- how evolution changed life forms.

Assessment

State standards
teacher tests
classroom observations
laboratory activities
class discussions
worksheets

State Standards Met:

8.4.4, 8.4.5, 8.7.2

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

Students will be able to demonstrate the use of weather equipment, analyze data, and be able to interpret weather maps and reports.

List of Learnings – I want the student to learn...

- the names and uses of weather equipment.
- the order of information given on national and a local weather report.
- to interpret daily weather maps, the fronts, pressure systems and the weather associated with them.

Assessment

STARS online, CPS quiz, classroom quiz, daily US maps to fill out

State Standards Met:

8.1.2, 8.1.3, 8.7.3

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

The student will be able to describe the objects and motions of the objects in our solar system and the night sky, and analyze their apparent motions .

List of Learnings – I want the student to learn...

- The forces involved in revolution and rotation of planets
- The characteristics of the planets in the solar system
- The order of phases of the moon

Assessment

Lab determining Period of revolution, Moon phase activity, STARS online, classroom quiz

State Standards Met:

8.1.3, 8.2.1, 8.3.2, 8.5.3

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

Students will recognize people and events in the history of space exploration

List of Learnings – I want the student to learn...

- Names and order of NASA programs that have been undertaken since the beginning of the space program
- Names of the rockets and space shuttles that have been used
- Name of significant astronauts and the accomplishments each made to the space program

Assessment

Chapter quizzes, timelines

State Standards Met:

8.8.1, 8.8.3

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

Students will understand the structure of the earth, including layers, rocks types and formation, and analyze the processes that create volcanic and earthquake activity.

List of Learnings – I want the student to learn...

- The forces involved shaping the earth's volcanoes and earthquakes
- The locations of many of the world's volcanoes and severe earthquakes
- To analyze the 3 types of rocks and identify samples from each type by name, and describe how they are used in daily life applications

Assessment

STARS online, classroom quiz, rock sample identification activity

State Standards Met:

8.5.1, 8.2.1

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

Students will demonstrate an understanding of the scientific process by designing and carrying out an individual experiment and analyzing the data.

List of Learnings – I want the student to learn...

- Terms related to the scientific method
- How to set up their own experiment and carry it out
- How to analyze the results of an experiment

Assessment

Report and poster display of their project
STARS assessment, classroom quiz

State Standards Met:

8.1.3, 8.2.1

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

Students will be able to analyze everyday products to identify common elements and compounds found in them, and distinguish the difference between physical and chemical properties.

List of Learnings – I want the student to learn...

- Names and symbols of common elements and compounds
- To analyze household products and see what chemicals are found in things we use everyday
- How to do chemical reactions and understand how they happen

Assessment

STARS assessment, classroom quiz, home project to bring products or labels which show chemicals, Lab activities using chemicals

State Standards Met:

8.3.1

Holdrege Public Schools Earth Science Curriculum

8th Grade

Performance Objective

Students will understand the processes in the water cycle, and factors affecting the quality of our water and soil.

List of Learnings – I want the student to learn...

- Terms related to each process of the water cycle
- How water and soil sources are contaminated
- How tests are performed to determine water and soil quality

Assessment

Classroom quiz, STARS, Water cycle illustration, in-class testing of water and soil resources

State Standards Met:

8.5.1

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will understand the Scientific Method.

List of Learnings – I want the student to learn...

- The steps of the scientific method.
- Use the scientific method to organize data.
- Use graphs to draw conclusions.

Assessment

Chapter 1 Test

State Standards Met:

12.1.1,
12.1.2

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will identify matter and identify states of matter.

List of Learnings – I want the student to learn...

- How to classify matter.
- Identify the states of matter.
- Solve original problems dealing with classification of matter.

Assessment

Chapter 2 Test
Chapter 3 Test
Chapter 4 Test
Chapter 5 Test

State Standards Met:

12.3.1
12.3.2

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will learn the basics of chemical and nuclear reactions.

List of Learnings – I want the student to learn...

- The types of chemical reactions.
- The types of nuclear reactions.
- The similarities and differences between covalent and ionic bonding.

Assessment

Chapter 7 Test
Chapter 9 Test
Chapter 10 Test

State Standards Met:

12.3.1
12.3.3

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will learn the properties of acids and bases.

List of Learnings – I want the student to learn...

- The properties of acids.
- The properties of bases.
- To apply pH..

Assessment

Chapter 9 Test

State Standards Met:

12.3.1
12.3.3

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will calculate motion and forces.

List of Learnings – I want the student to learn...

- How to calculate constant velocity and speed.
- How to calculate constant acceleration.
- Newton's three laws of motion.

Assessment

Chapter 11 Test
Chapter 12 Test

State Standards Met:

12.3.4

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will apply the Law of Conservation of Energy.

List of Learnings – I want the student to learn...

- The law of conservation of energy.
- Applications of energy transformations.
- Different types of energy usage.

Assessment

Chapter 13 Test

State Standards Met:

12.3.5

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will distinguish between mechanical and electromagnetic waves.

List of Learnings – I want the student to learn...

- Identify transverse waves.
- Identify longitudinal waves.
- Identify surface waves.
- The properties of electromagnetic waves and light.

Assessment

Chapter 15 Test
Chapter 16 Test

State Standards Met:

12.3.5
12.3.6

Holdrege Public Schools Physical Science Curriculum 9th Grade

Performance Objective

Students will review topics in Earth Science.

List of Learnings – I want the student to learn...

- Energy in the Earth system.
- Geochemical cycles.
- Origin of the earth system.
- Origin of the universe.

Assessment

State Standards tests.

State Standards Met:

12.5.1, 12.5.2, 12.5.3, 12.5.4

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop and practice abilities needed to do scientific method

List of Learnings – I want the student to learn...

- The steps to the scientific method
- The difference between a responding and manipulated variable
- How to set up a fair test
- How to test a hypothesis
- How to read different types of graphs

Assessment

Test Unit 1

State Standards Met:

12.2.1

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop an understanding of the cell.

List of Learnings – I want the student to learn...

- The different kinds of cells
- The parts of a cell
- The function of the cell parts
- The way the form of the cell part is related to the function

Assessment

Test Unit 4

State Standards Met:

12.4.1

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop an understanding of the molecular basis of heredity.

List of Learnings – I want the student to learn...

- How genes combine
- How traits are passed on
- The process of meiosis
- How DNA functions in the cell
- About probability with the use of Punnett squares

Assessment

Test Unit 18

State Standards Met:

12.4.2

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop an understanding of the theory of biological evolution.

List of Learnings – I want the student to learn...

- The definition of adaptation
- Some examples of adaptation
- What Natural Selection means
- Evidence of evolution
- Different theories of evolution

Assessment

Unit Test 19

State Standards Met:

12.4.3

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop an understanding of the interdependence of organisms

List of Learnings – I want the student to learn...

- The different needs of organisms
- The components of an ecosystem
- What the limiting factors are in an ecosystem
- The difference between a food web and a food pyramid
- Types of relationships in an ecosystem
- The feeding levels in an ecosystem

Assessment

Test Unit 2
Test Unit 3

State Standards Met:

12.4.4

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop an understanding of matter, energy, and organization in living systems.

List of Learnings – I want the student to learn...

- The ultimate power source is the sun
- The variety of living organisms
- The classification of living organisms
- The formula for photosynthesis

Assessment

Test Unit 11
Test Unit 3
Test Unit 6
Test Unit 5
Test Unit 7

State Standards Met:

12.4.5

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will develop an understanding of the behavior of organisms

List of Learnings – I want the student to learn...

- The difference between innate and learned behaviors
- Which body systems in mammals control behavior
- Why animals migrate
- How animals communicate
- How natural selection is related to behavior

Assessment

Test Unit 3
Test Unit 15
Test Unit 19

State Standards Met:

12.4.6

Holdrege Public Schools Basic Biology Curriculum 9-10th Grade

Performance Objective

Students will learn the major components and functions of several human body systems

List of Learnings – I want the student to learn...

- The parts and functions of the nervous, endocrine, skeletal, muscular, circulatory, digestive, respiratory, excretory and reproductive systems

Assessment

Test Unit 11
Test Unit 12
Test Unit 13
Test Unit 14
Test Unit 15
Test Unit 16
Test Unit 17

State Standards Met:

12.4.6

Holdrege Public Schools Biology Curriculum

10th Grade

Performance Objective

Students will have an understanding of the field of biology and the chemistry of life. Techniques used by scientists and the scientific method will be understood.

List of Learnings – I want the student to learn...

- What the goal of science is.
- What a hypothesis is.
- How scientists test hypotheses.
- How a scientific theory develops.
- The characteristics of living things.
- How life can be studied at different levels.
- The measurement system most scientists use.
- How light and electron microscopes differ.
- Common laboratory techniques.
- Why safety is important in biology.
- Why water molecules are polar.
- Difference between solutions and suspensions.
- What acidic and basic solutions are.
- The function of each group of organic compounds.
- How chemical reactions affect chemical bonds in compounds.
- How energy changes affect how easily a chemical reaction will occur.
- Why enzymes are important to living things.

Assessment

Homework questions throughout the chapter.
Quizzes at the end of each chapter section.
Chapter test.

State Standards Met:

12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.1.5, 12.2.1, 12.3.1, 12.3.2, 12.3.3, 12.3.5, 12.3.6, 12.4.1, 12.6.1, 12.6.2, 12.8.1, 12.8.2, 12.8.3

Holdrege Public Schools Biology Curriculum

10th Grade

Performance Objective

Students will understand interactions of living things in the biosphere.

List of Learnings – I want the student to learn...

- The levels of organization that ecologists study.
- The methods used to study ecology.
- The source of energy for life processes.
- The flow of energy through living systems.
- The efficiency of energy transfer among organisms in an ecosystem.
- How matter cycles among the living and nonliving parts of an ecosystem.
- Why nutrients are important in living systems.
- How the availability of nutrients affects the productivity of ecosystems.
- The characteristics of major land biomes.
- Factors that govern aquatic ecosystems.
- Characteristics used to describe a population.
- Factors that affect population size.
- Factors that limit population growth.

Assessment

Homework questions for each chapter.
Quizzes for each section in the chapter.
Chapter test.

State Standards Met:

12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.1.5, 12.2.1, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.4.3, 12.4.4, 12.4.5, 12.4.6, 12.5.1, 12.5.2, 12.6.1, 12.6.2, 12.7.2, 12.7.4, 12.7.5, 12.7.6, 12.8.1

Holdrege Public Schools Biology Curriculum 10th Grade

Performance Objective

Students will understand cell structure and function and cell growth and division.

List of Learnings – I want the student to learn...

- What the cell theory is.
- The basic cell structures.
- The difference between prokaryotes and eukaryotes.
- Functions of cell organelles.
- Functions of the cell membrane.
- What happens during diffusion.
- The processes of osmosis, facilitated diffusion, and active transport.
- Cell specialization.
- The organizational levels in multicellular organisms.

Assessment

Homework questions throughout chapters.
Quizzes over each section in the chapters.
Chapter tests.

State Standards Met:

12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.1.5, 12.2.1, 12.3.4, 12.4.1, 12.4.3, 12.4.4, 12.4.5, 12.4.6, 12.6.1, 12.6.2, 12.7.2, 12.7.3, 12.7.4, 12.7.5, 12.7.6, 12.8.1, 12.8.3

Holdrege Public Schools Biology Curriculum

10th Grade

Performance Objective

Students will have an understanding of DNA and RNA and their role in genetics.

List of Learnings – I want the student to learn...

- The problem that growth causes for cells.
- How cell division solves the problems of cell growth.
- The main events of the cell cycle.
- What happens during the four phases of mitosis.
- How the cell cycle is regulated.
- How cancer cells are different from other cells.
- How Mendel studied inheritance in peas.
- Mendel's conclusion about inheritance.
- The principle of dominance.
- What happens during segregation.
- How geneticists use the principles of probability.
- How geneticists use Punnett squares.
- The principle of independent assortment.
- The inheritance patterns that exist aside from simple dominance.
- How Mendel's principles apply to all organisms.
- The chromosome number of body cells and gametes.
- The events of meiosis.
- The difference between mitosis and meiosis.
- Structure of DNA and relationship to genes.
- DNA replication.
- Types of RNA and the process of protein synthesis.

Homework questions in chapters.
Quizzes for each section in chapters.
Chapter tests.

State Standards Met:

12.1.2, 12.1.3, 12.1.5, 12.2.1, 12.3.1, 12.3.2, 12.4.2, 12.6.1, 12.6.2, 12.7.1, 12.8.1, 12.8.2, 12.8.3

Holdrege Public Schools Biology Curriculum 10th Grade

Performance Objective

Understand natural selection and Darwin's theory of evolution.

List of Learnings – I want the student to learn...

- Darwin's observations in the Galapagos Islands.
- Lamarck's thoughts on evolution.
- How natural variation is used in artificial selection.
- How natural selection is related to species' fitness.
- Evidence Darwin used to present his case for evolution.
- Darwin's theory of evolution by natural selection.
- What a gene pool is.
- Conditions necessary for a new species to evolve.

Assessment

Homework questions throughout chapters.
Quizzes over each section of the chapters.
Chapter tests.

State Standards Met:

12.1.1, 12.1.2, 12.1.3, 12.1.4, 12.1.5, 12.2.1, 12.4.2, 12.4.3, 12.4.4, 12.4.5, 12.4.6, 12.5.1, 12.5.3, 12.6.1, 12.7.4, 12.7.5, 12.8.1, 12.8.2, 12.8.3

Holdrege Public Schools Biology Curriculum

10th Grade

Performance Objective

Students will understand the relationship between all the systems of the human body.

List of Learnings – I want the student to learn...

- How the human body is organized and the importance of homeostasis.
- The function of the nervous system and divisions.
- Types of receptors.
- Effects of drugs on the nervous system.
- The structure of bone tissue.
- Functions of the skeletal system.
- Types of joints.
- Types of muscle tissue and how it contracts.
- Structure and function of the integumentary system.
- Structure and function of the circulatory system.
- The makeup of blood.
- The lymphatic system.
- Structures and functions of the respiratory system.
- The nutrients the body needs.
- Organs of the digestive system and their functions.
- Organs of the excretory system and their functions.
- Organs of the endocrine and reproductive systems and their functions.
- The process of fertilization and development.
- How the immune system functions and diseases.

Assessment

Lab work and dissections – frog, heart, brain, eye, pig and cow uterus.
Homework questions in each chapter.
Quizzes after each section of the chapters.
Chapter tests.

State Standards Met:

12.1.1, 12.1.2, 12.1.3, 12.2.1, 12.3.3, 12.3.6, 12.4.1, 12.4.2, 12.6.1, 12.6.2, 12.7.1, 12.7.2, 12.8.1, 12.8.3

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will use measurement and data, along with the scientific method

List of Learnings – I want the student to learn...

- Students will list the steps of the scientific method.
- Measurements using the SI system.
- How to do problems using real and contrived data.

Assessment

Chapter 1 Test
Chapter 2 Test

State Standards Met:

12.2.1

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will learn the properties of matter from atoms to electrons.

List of Learnings – I want the student to learn...

- The differences in solids, liquids and gases.
- The qualitative and quantitative properties of matter
- How to work problems involving density and temperature.

Assessment

Chapter 3 Test
Chapter 4 Test

State Standards Met:

12.3.1
12.3.2

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will use the periodic table to make predictions.

List of Learnings – I want the student to learn...

- Students will learn how the periodic table can be used to predict electron configuration.
- Students will learn how the periodic table can be used to predict valence electrons
- Students will learn trends in the periodic table.

Assessment

Chapter 6 Test
Chapter 7 Test

State Standards Met:

12.3.1
12.3.2

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will learn how atoms and ions bond in compounds.

List of Learnings – I want the student to learn...

- Students will learn how ionic compounds form.
- Students will learn how covalent compounds form
- Students will learn trends in the periodic table.

Assessment

Chapter 6 Test
Chapter 7 Test

State Standards Met:

12.3.1
12.3.2

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will do quantitative calculations with chemical reactions using moles.

List of Learnings – I want the student to learn...

- How to write and balance chemical reactions.
- Application of chemical reactions while doing a stoichiometry lab
- How to work problems using stoichiometry.

Assessment

Chapter 10 Test
Chapter 11 Test
Chapter 12 Test

State Standards Met:

12.3.3

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will use the gas laws.

List of Learnings – I want the student to learn...

- Students will learn qualitative properties of gases.
- Grahms Law and Boyle's Law in the Lab
- How to work problems using gas laws.

Assessment

Chapter 14 Test

State Standards Met:

12.3.2
12.3.3

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students apply concept of equilibrium.

List of Learnings – I want the student to learn...

- How to define chemical equilibrium.
- Le Chatelier's Principle
- How to work problems using equilibrium concentrations.

Assessment

Chapter 18 Test

State Standards Met:

12.3.2
12.3.3

Holdrege Public Schools Chemistry Curriculum

11th Grade

Performance Objective

Students will learn the chemistry of acids and bases.

List of Learnings – I want the student to learn...

- Students will learn the properties of Acids and Bases.
- Students will learn about acid – base neutralization.
- Students will work problems using equilibrium concentrations.

Assessment

Chapter 19 Test

State Standards Met:

12.3.2
12.3.3

Holdrege Public Schools Physics Curriculum 12th Grade

Performance Objective

Students apply the Scientific Method graphically and mathematically.

List of Learnings – I want the student to learn...

- How to graph using data.
- How to linearize the data to form an equation.
- How to do calculations using significant figures.

Assessment

Unit 1 Test

State Standards Met:

12.1.2
12.1.3
12.2.1

Holdrege Public Schools Physics Curriculum 12th Grade

Performance Objective

Students will learn and apply constant velocity and constant acceleration.

List of Learnings – I want the student to learn...

- How to graphically represent constant velocity.
- How to graphically represent constant acceleration.
- How to do calculations involving constant velocity and constant acceleration.

Assessment

Unit 2 Test
Unit 3 Test

State Standards Met:

12.1.2
12.1.5
12.3.4

Holdrege Public Schools Physics Curriculum

12th Grade

Performance Objective

Students will learn and apply Newton's three laws of motion.

List of Learnings – I want the student to learn...

- Newton's 2nd law of motion.
- Newton's 1st and 3rd laws of motion.
- How to do calculations involving Newton's three laws of motion..

Assessment

Unit 4 Test
Unit 5 Test

State Standards Met:

12.1.2
12.3.4

Holdrege Public Schools Physics Curriculum 12th Grade

Performance Objective

Students will do energy and momentum transformation calculations.

List of Learnings – I want the student to learn...

- About elastic potential energy in the laboratory.
- How to do qualitative energy transformations.
- How to do quantitative energy transformations.

Assessment

Unit 7 Test

State Standards Met:

12.3.4
12.3.5
12.3.6

Holdrege Public Schools Physics Curriculum 12th Grade

Performance Objective

Students will learn the laws associated with fluids.

List of Learnings – I want the student to learn...

- How to do density calculations.
- How to do buoyancy calculations.
- How to do Bernoulli's Principle calculations.

Assessment

Fluids Test

State Standards Met:

12.3.4
12.3.6

Holdrege Public Schools Physics Curriculum

12th Grade

Performance Objective

Students will learn advanced properties of mechanical and electromagnetic waves.

List of Learnings – I want the student to learn...

- How to do calculations involving mechanical and electromagnetic waves.
- How to do pinhole, mirror, and lens calculations.
- About the speed of light using a high-speed photography activity.

Assessment

Waves Test
Sound Test
Light Test

State Standards Met:

12.3.6

Holdrege Public Schools Anatomy Curriculum 12th Grade

Performance Objective

For each system studied, including tissues, integumentary, skeletal and joints, muscular, nervous, cardiovascular, digestive, reproductive and pregnancy, students will understand the structure of organs that make up the system and how they function.

List of Learnings – I want the student to learn...

- Every organ that makes up systems of the human body that are studied.
- Specific structures from the microscopic level to structures that can be seen with the naked eye of each organ.
- What the organs do for the system they are found in.
- What the function is of each organ in a system.

Assessment

Homework packets for each chapter.
Quizzes over each section of chapters.
Chapter tests.
Fetal pig dissection grades.
Dissection of sheep brain, sheep heart, and cow eye.

State Standards Met:

12.1.1, 12.4.1, 12.4.5, 12.7.1, 12.8.1

Holdrege Public Schools Anatomy Curriculum 12th Grade

Performance Objective

Homeostatic imbalances and diseases associated with each system of the body will be studied.

List of Learnings – I want the student to learn...

- What happens when homeostasis is disrupted in the human body.
- What are specific diseases associated with the systems of the human body.
- How doctors treat these diseases.
- Illnesses or sicknesses associated with systems for the human body.

Assessment

Homework packets for each chapter.
Quizzes over each section of chapters.
Chapter tests.

State Standards Met:

12.1.1, 12.4.1, 12.4.5, 12.4.6, 12.7.1, 12.7.4, 12.8.1

Holdrege Public Schools Anatomy Curriculum 12th Grade

Performance Objective

Students will understand the developmental aspects to each system studied from the embryonic stages through old age.

List of Learnings – I want the student to learn...

- How organs and systems develop during the embryonic stages.
- How organs and systems change and develop during infancy through adulthood.
- How organs and systems change during old age.
- Disruptions in homeostasis during the aging process.
- Diseases and illnesses associated with aging of the body systems.

Assessment

Homework packets for each chapter.
Quizzes over each section of chapters.
Chapter tests.

State Standards Met:

12.1.1, 12.1.5, 12.4.1, 12.4.2, 12.4.5, 12.4.6, 12.7.1, 12.8.1