

§112.5. Science, Grade 3.

(a) Introduction.

- (1) In Grade 3, the study of science includes planning and implementing simple classroom and field investigations to develop the skills of collecting information using tools such as a microscope, making inferences, communicating conclusions, and making informed decisions. Students also use computers and information technology tools to support scientific investigations.
- (2) As students learn science skills, they identify the importance of components of the natural world including rocks, soils, water, and atmospheric gases. They observe the direction and position of objects as they are pushed and pulled, and movement of the Earth's surface as examples of change caused by a force. Students investigate magnetism and gravity. In addition, students explore organisms' needs, habitats, and competition with other organisms within their ecosystem.
- (3) Science is a way of learning about the natural world. Students should know how science has built a vast body of changing and increasing knowledge described by physical, mathematical, and conceptual models, and also should know that science may not answer all questions.
- (4) A system is a collection of cycles, structures, and processes that interact. Students should understand a whole in terms of its components and how these components relate to each other and to the whole. All systems have basic properties that can be described in terms of space, time, energy, and matter. Change and constancy occur in systems and can be observed and measured as patterns. These patterns help to predict what will happen next and can change over time.
- (5) Investigations are used to learn about the natural world. Students should understand that certain types of questions can be answered by investigations, and that methods, models, and conclusions built from these investigations change as new observations are made. Models of objects and events are tools for understanding the natural world and can show how systems work. They have limitations and based on new discoveries are constantly being modified to more closely reflect the natural world.

(b) Knowledge and skills.

(3.1)Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:

- (A) demonstrate safe practices during field and laboratory investigations; and
- (B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.

(3.2)Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

- (A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology;
- (B) collect information by observing and measuring;
- (C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence;
- (D) communicate valid conclusions; and
- (E) construct simple graphs, tables, maps, and charts to organize, examine and evaluate information.

(3.3)Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions. The student is expected to:

- (A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;
- (B) draw inferences based on information related to promotional materials for products and services;
- (C) represent the natural world using models and identify their limitations;
- (D) evaluate the impact of research on scientific thought, society, and the environment; and

(E) connect Grade 3 science concepts with the history of science and contributions of scientists.

(3.4)Scientific processes. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:

(A) collect and analyze information using tools including calculators, microscopes, cameras, safety goggles, sound recorders, clocks, computers, thermometers, hand lenses, meter sticks, rulers, balances, magnets, and compasses; and

(B) demonstrate that repeated investigations may increase the reliability of results.

(3.5)Science concepts. The student knows that systems exist in the world. The student is expected to:

(A) observe and identify simple systems such as a sprouted seed and a wooden toy car; and

(B) observe a simple system and describe the role of various parts such as a yo-yo and string.

(3.6)Science concepts. The student knows that forces cause change. The student is expected to:

(A) measure and record changes in the position and direction of the motion of an object to which a force such as a push or pull has been applied; and

(B) identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers.

(3.7)Science concepts. The student knows that matter has physical properties. The student is expected to:

(A) gather information including temperature, magnetism, hardness, and mass using appropriate tools to identify physical properties of matter; and

(B) identify matter as liquids, solids, and gases.

(3.8)Science concepts. The student knows that living organisms need food, water, light, air, a way to dispose of waste, and an environment in which to live. The student is expected to:

(A) observe and describe the habitats of organisms within an ecosystem;

(B) observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space;

(C) describe environmental changes in which some organisms would thrive, become ill, or perish; and

(D) describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home.

(3.9) Science concepts. The student knows that species have different adaptations that help them survive and reproduce in their environment. The student is expected to:

(A) observe and identify characteristics among species that allow each to survive and reproduce; and

(B) analyze how adaptive characteristics help individuals within a species to survive and reproduce.

(3.10) Science concepts. The student knows that many likenesses between offspring and parents are inherited from the parents. The student is expected to:

(A) identify some inherited traits of plants; and

(B) identify some inherited traits of animals.

(3.11) Science concepts. The student knows that the natural world includes earth materials and objects in the sky. The student is expected to:

(A) identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable, or inexhaustible resources;

(B) identify and record properties of soils such as color and texture, capacity to retain water, and ability to support the growth of plants;

(C) identify the planets in our solar system and their position in relation to the Sun; and

(D) describe the characteristics of the Sun.

Source: The provisions of this §112.5 adopted to be effective September 1, 1998, 22 TexReg 7647.