Mad Science®

Correlations with
Texas Essential Knowledge And Skills for Science

Adopted in September 1st 1998

January 2008

Afterschool-Progam = ASP, Workshop = WS

Kindergarten

KNOWLEDGE AND SKILLS

(1) **Scientific processes**. The student participates in classroom and field investigations following home and school safety procedures. The student is expected to:

(A) demonstrate safe practices during classroom and field investigations; and
(B) learn how to use and conserve resources and materials.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(2) **Scientific processes**. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events;
(B) plan and conduct simple descriptive investigations;
(C) gather information using simple equipment and tools to extend the senses;
(D) construct reasonable explanations using information; and
(E) communicate findings about simple investigations.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(3) **Scientific processes**. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information;
(B) discuss and justify the merits of decisions; and
(C) explain a problem in his/her own words and propose a solution.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(4) **Scientific processes**. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(A) identify and use senses as tools of observation; and
(B) make observations using tools including hand lenses, balances, cups, bowls, and computers.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(5) **Science concepts**. The student knows that organisms, objects, and events have properties and patterns. The student is expected to:

(A) describe properties of objects and characteristics of organisms

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(B) observe and identify patterns including seasons, growth, and day and night and predict what happens next; and

"WALLOPING WEATHER" ASP

(C) recognize and copy patterns seen in charts and graphs.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(6) **Science concepts**. The student knows that systems have parts and are composed of organisms and objects. The student is expected to:

(A) sort organisms and objects into groups according to their parts and describe how the groups are formed;

"ALL ABOUT ANIMALS" ASP
"MAD SCIENCE MACHINES" ASP
"DINOSAURS" WS

(B) record observations about parts of plants including leaves, roots, stems, and flowers;

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(C) record observations about parts of animals including wings, feet, heads, and tails;

"ALL ABOUT ANIMALS" ASP
"BUGS!" ASP
"DINOSAURS" WS

(D) identify parts that, when separated from the whole, may result in the part or the whole not working, such as cars without wheels and plants without roots;

"MAD SCIENCE MACHINES" ASP

(E) manipulate parts of objects such as toys, vehicles, or construction sets that, when put together, can do things they cannot do by themselves.

"MAD SCIENCE MACHINES" ASP
"SCIENCE OF TOYS" ASP

(7) **Science concepts**. The student knows that many types of change occur. The student is expected to:

(A) observe, describe, and record changes in size, mass, color, position, quantity, time, temperature, sound, and movement;

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(B) identify that heat causes change, such as ice melting or the Sun warming the air and compare objects according to temperature;

"ATMIOSPHERE AND BEYOND" ASP
"SPACE PHENOMENA" ASP
"DRY ICE CAPADES" ASP
"SUN AND STARS" ASP
"HARNESSING HEAT" ASP
"CHEM IN A FLASH" ASP

(C) observe and record weather changes from day to day and over seasons;

"WALLOPING WEATHER" ASP

(D) observe and record stages in the life cycle of organisms in their natural environment.

"BUGS!" ASP
"ALL ABOUT ANIMALS" ASP
"LIFE IN THE SEA" ASP

(8) **Science concepts**. The student knows the difference between living organisms and nonliving objects. The student is expected to:

(A) identify a particular organism or object as living or nonliving

(B) group organisms and objects as living or nonliving.

"ALL ABOUT ANIMALS" ASP

(9) **Science concepts**. The student knows that living organisms have basic needs. The student is expected to:

(A) identify basic needs of living organisms;

"BUGS!" ASP
"ALL ABOUT ANIMALS" ASP
"LIFE IN THE SEA" ASP
"BODY BASICS" WS
"DECOMPOSERS" WS
"DINOSAURS" WS

(B) give examples of how living organisms depend on each other;
(C) identify ways that the Earth can provide resources for life.

"ALL ABOUT ANIMALS" ASP

(10) **Science concepts.** The student knows that the natural world includes rocks, soil, and water. The student is expected to:

(A) observe and describe properties of rocks, soil, and water;
(B) give examples of ways that rocks, soil, and water are useful.

"EARTHWORKS" ASP

Grade 1

KNOWLEDGE AND SKILLS

(1) **Scientific processes**. The student conducts classroom and field investigations following home and school safety procedures. The student is expected to:

(A) demonstrate safe practices during classroom and field investigations;
(B) learn how to use and conserve resources and materials.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(2) **Scientific processes**. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events;
(B) plan and conduct simple descriptive investigations;
(C) gather information using simple equipment and tools to extend the senses;
(D) construct reasonable explanations and draw conclusions; and
(E) communicate explanations about investigations.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(3) **Scientific processes**. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information;
(B) discuss and justify the merits of decisions; and
(C) explain a problem in his/her own words and identify a task and solution related to the problem.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(4) **Scientific processes**. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(A) collect information using tools including hand lenses, clocks, computers, thermometers, and balances;
(B) record and compare collected information;
(C) measure organisms and objects and parts of organisms and objects, using non-standard units such as paper clips, hands, and pencils.

"SPACE TECHNOLOGY" ASP
"LAB WORKS" ASP
"WALLOPING WEATHER" ASP
"MEASUREMENT" WS

(5) **Science concepts**. The student knows that organisms, objects, and events have properties and patterns. The student is expected to:

(A) sort objects and events based on properties and patterns;
(B) identify, predict, and create patterns including those seen in charts, graphs, and numbers.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(6) **Science concepts**. The student knows that systems have parts and are composed of organisms and objects. The student is expected to:

(A) sort organisms and objects according to their parts and characteristics;

"ALL ABOUT ANIMALS" ASP
"DINOSAURS" WS

(B) observe and describe the parts of plants and animals;

"ALL ABOUT ANIMALS" ASP

(C) manipulate objects such as toys, vehicles, or construction sets so that the parts are separated from the whole which may result in the part or the whole not working;

"MAD SCIENCE MACHINES" ASP
"SCIENCE OF TOYS" ASP

(D) identify parts that, when put together, can do things they cannot do by themselves, such as a working camera with film, a car moving with a motor, and an airplane flying with fuel.

"ROCKET SCIENCE" ASP
"RADICAL ROBOTS" ASP

(7) **Science concepts**. The student knows that many types of change occur. The student is expected to:

(A) observe, measure, and record changes in size, mass, color, position, quantity, sound, and movement;

"PH FACTOR" ASP
"SLIME TIME" ASP
"CHE-MYSTERY" ASP
"MEASUREMENT" WS
"SLIPPERY SCIENCE" WS

(B) identify and test ways that heat may cause change such as when ice melts;

"DRY ICE CAPADES" ASP
"HARNESSING HEAT" ASP

(C) observe and record changes in weather from day to day and over seasons;

"WALLOPING WEATHER" ASP

(D) observe and record changes in the life cycle of organisms.

"ALL ABOUT ANIMALS" ASP

(8) **Science concepts**. The student distinguishes between living organisms and nonliving objects. The student is expected to:

(A) group living organisms and nonliving objects; and
(B) compare living organisms and nonliving objects.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(9) **Science concepts**. The student knows that living organisms have basic needs. The student is expected to:

(A) identify characteristics of living organisms that allow their basic needs to be met;

"ALL ABOUT ANIMALS" ASP
"LIFE IN THE SEA" ASP

(B) compare and give examples of the ways living organisms depend on each other for their basic needs.

“ALL ABOUT ANIMALS” ASP

(10) **Science concepts**. The student knows that the natural world includes rocks, soil, and water. The student is expected to:

(A) identify and describe a variety of natural sources of water including streams, lakes, and oceans;
(B) observe and describe differences in rocks and soil samples;
(C) identify how rocks, soil, and water are used and how they can be recycled.

“EARTHWORKS” ASP
“WACKY WAVES” ASP

Grade 2

KNOWLEDGE AND SKILLS

(1) **Scientific processes**. The student conducts classroom and field investigations following home and school safety procedures. The student is expected to:

(A) demonstrate safe practices during classroom and field investigations;
(B) learn how to use and conserve resources and dispose of materials.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(2) **Scientific processes**. The student develops abilities necessary to do scientific inquiry in the field and the classroom. The student is expected to:

(A) ask questions about organisms, objects, and events;
(B) plan and conduct simple descriptive investigations;
(C) compare results of investigations with what students and scientists know about the world;
(D) gather information using simple equipment and tools to extend the senses;
(E) construct reasonable explanations and draw conclusions using information and prior knowledge;
(F) communicate explanations about investigations.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(3) **Scientific processes**. The student knows that information and critical thinking are used in making decisions. The student is expected to:

(A) make decisions using information;
(B) discuss and justify the merits of decisions; and
(C) explain a problem in his/her own words and identify a task and solution related to the problem.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(4) **Scientific processes**. The student uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured. The student is expected to:

(A) collect information using tools including rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, and balances;

"SPACE TECHNOLOGY" ASP
"LAB WORKS" ASP
"WALLOPING WEATHER" ASP
"MEASUREMENT" WS

(B) measure and compare organisms and objects and parts of organisms and objects, using standard and non-standard units.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(5) **Science concepts**. The student knows that organisms, objects, and events have properties and patterns. The student is expected to:

(A) classify and sequence organisms, objects, and events based on properties and patterns; and
(B) identify, predict, replicate, and create patterns including those seen in charts, graphs, and numbers.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(6) **Science concepts**. The student knows that systems have parts and are composed of organisms and objects. The student is expected to:

(A) manipulate, predict, and identify parts that, when separated from the whole, may result in the part or the whole not working, such as flashlights without batteries and plants without leaves;

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(B) manipulate, predict, and identify parts that, when put together, can do things they cannot do by themselves, such as a guitar and guitar strings;

"MAD SCIENCE MACHINES" ASP
"SCIENCE OF TOYS" ASP

(C) observe and record the functions of plant parts;

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(D) observe and record the functions of animal parts.

"ALL ABOUT ANIMALS" ASP
"BODY BASICS" WS
"DINOSAURS" WS

(7) **Science concepts.** The student knows that many types of change occur. The student is expected to:

(A) observe, measure, record, analyze, predict, and illustrate changes in size, mass, temperature, color, position, quantity, sound, and movement;

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(B) identify, predict, and test uses of heat to cause change such as melting and evaporation;

"ATMIOSPHERE AND BEYOND" ASP
"SPACE PHENOMENA" ASP
"DRY ICE CAPADES" ASP
"SUN AND STARS" ASP
"HARNESSING HEAT" ASP
"CHEM IN A FLASH" ASP

(C) demonstrate a change in the motion of an object by giving the object a push or a pull;

"MAD SCIENCE MACHINES" ASP

(D) observe, measure, and record changes in weather, the night sky, and seasons.

"WALLOPING WEATHER" ASP

(8) **Science concepts**. The student distinguishes between living organisms and nonliving objects. The student is expected to:

(A) identify characteristics of living organisms;

"BUGS!" ASP
"ALL ABOUT ANIMALS" ASP
"LIFE IN THE SEA" ASP
"DECOMPOSERS" WS
"DINOSAURS" WS
"BODY BASICS" WS

(B) identify characteristics of nonliving objects.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(9) **Science concepts**. The student knows that living organisms have basic needs. The student is expected to:

(A) identify the external characteristics of different kinds of plants and animals that allow their needs to be met;
(B) compare and give examples of the ways living organisms depend on each other and on their environments.

"ALL ABOUT ANIMALS" ASP

(10) **Science concepts**. The student knows that the natural world includes rocks, soil, water, and gases of the atmosphere. The student is expected to:

(A) describe and illustrate the water cycle;
(B) identify uses of natural resources.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

Grade 3

KNOWLEDGE AND SKILLS

(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;

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.

"THE DIRT ON GARBAGE" WS

(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.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

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

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

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

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(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;

"MAD SCIENCE MACHINES" ASP

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

“SCIENCE OF TOYS” ASP

(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;

“FUN-DAMENTAL FORCES” ASP
“MAD SCIENCE MACHINES” ASP

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

“EARTHWORKS” ASP
“MINERAL MANIA” WS

(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;

“MAGNETIC MAGIC” ASP
“HARNESSING HEAT” ASP
“MATTER OF FACT” WS
“MISCHIEVOUS MAGNETS” WS

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

“DRY ICE CAPADES” ASP
“SLIME TIME” ASP
“MATTER OF FACT” WS
“PLAYING WITH POLYMERS” WS

(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.

“ALL ABOUT ANIMALS” ASP
“ECOSYSTEMS” WS

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

“ALL ABOUT ANIMALS” ASP
“ECOSYSTEMS” WS
“PHOTOSYNTHESIS” WS

(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;

“PHOTOSYNTHESIS” WS

(B) identify some inherited traits of animals.

“ALL ABOUT ANIMALS” ASP

(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;

“EARTHWORKS” ASP
“THE DIRT ON GARBAGE” WS
“MINERAL MANIA” WS

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

“MINERAL MANIA” WS

(C) identify the planets in our solar system and their position in relation to the Sun;
(D) describe the characteristics of the Sun.

“NASA AFSE -ALL” ASP

Grade 4

KNOWLEDGE AND SKILLS

(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.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(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.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(3) **Scientific processes**. The student uses critical thinking and scientific problem solving to make informed 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;
(E) connect Grade 4 science concepts with the history of science and contributions of scientists.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(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, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses; and
(B) demonstrate that repeated investigations may increase the reliability of results.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(5) **Science concepts**. The student knows that complex systems may not work if some parts are removed. The student is expected to:

(A) identify and describe the roles of some organisms in living systems such as plants in a schoolyard, and parts in nonliving systems such as a light bulb in a circuit;
(B) predict and draw conclusions about what happens when part of a system is removed.

"ALL ABOUT ANIMALS" ASP
"CURRENT EVENTS" ASP
"ECOSYSTEMS" WS
"ELECTRICITY" WS

(6) **Science concepts**. The student knows that change can create recognizable patterns. The student is expected to:

(A) identify patterns of change such as in weather, metamorphosis, and objects in the sky;

"WALLOPING WEATHER" ASP

(B) illustrate that certain characteristics of an object can remain constant even when the object is rotated like a spinning top, translated like a skater moving in a straight line, or reflected on a smooth surface;

(C) use reflections to verify that a natural object has symmetry.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

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

(A) observe and record changes in the states of matter caused by the addition or reduction of heat;

"ATMIOSPHERE AND BEYOND" ASP
"SPACE PHENOMENA" ASP
"DRY ICE CAPADES" ASP
"SUN AND STARS" ASP
"HARNESSING HEAT" ASP
"CHEM IN A FLASH" ASP

(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy.

"SLIME TIME" ASP
"SLIME" ASP
"CURRENT EVENTS" ASP
"MATTER OF FACT" WS
"ELECTRICITY" WS

(8) **Science concepts**. The student knows that adaptations may increase the survival of members of a species. The student is expected to:

(A) identify characteristics that allow members within a species to survive and reproduce;
(B) compare adaptive characteristics of various species;
(C) identify the kinds of species that lived in the past and compare them to existing species.

"ALL ABOUT ANIMALS" ASP
"ECOSYSTEMS" WS

(9) **Science concepts.** The student knows that many likenesses between offspring and parents are inherited or learned. The student is expected to:

(A) distinguish between inherited traits and learned characteristics; and
(B) identify and provide examples of inherited traits and learned characteristics.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(10) **Science concepts**. The student knows that certain past events affect present and future events. The student is expected to:

(A) identify and observe effects of events that require time for changes to be noticeable including growth, erosion, dissolving, weathering, and flow;

"EARTHWORKS" ASP
"MINERAL MANIA" WS

(B) draw conclusions about "what happened before" using fossils or charts and tables.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

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

(A) test properties of soils including texture, capacity to retain water, and ability to support life;

"MINERAL MANIA" WS

(B) summarize the effects of the oceans on land;

"BLACK AND BLUE OCEANS" WS

(C) identify the Sun as the major source of energy for the Earth and understand its role in the growth of plants, in the creation of winds, and in the water cycle.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

Grade 5

KNOWLEDGE AND SKILLS

(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.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

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

(A) plan and implement descriptive and simple experimental 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 using tools including computers to organize, examine, and evaluate information.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(3) **Scientific processes**. The student uses critical thinking and scientific problem solving to make informed 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;
(E) connect Grade 5 science concepts with the history of science and contributions of scientists.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(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, sound recorders, computers, hand lenses, rulers, thermometers, compasses, balances, hot plates, meter sticks, timing devices, magnets, collecting nets, and safety goggles; and
(B) demonstrate that repeated investigations may increase the reliability of results.

ALL MAD SCIENCE PROGRAMS MEET THESE REQUIREMENTS.

(5) **Science concepts**. The student knows that a system is a collection of cycles, structures, and processes that interact. The student is expected to:
(A) describe some cycles, structures, and processes that are found in a simple system;
(B) describe some interactions that occur in a simple system.

"ECOSYSTEMS" WS

(6) **Science concepts**. The student knows that some change occurs in cycles. The student is expected to:
(A) identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles;

(B) identify the significance of the water, carbon, and nitrogen cycles; and
(C) describe and compare life cycles of plants and animals.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

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

(A) classify matter based on its physical properties including magnetism, physical state, and the ability to conduct or insulate heat, electricity, and sound;
(B) demonstrate that some mixtures maintain the physical properties of their ingredients;
(C) identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving sugar in water; and
(D) observe and measure characteristic properties of substances that remain constant such as boiling points and melting points.

"PH FACTOR" ASP
"DRY ICE-CAPADES" ASP
"KITCHEN CHEMISTRY" ASP
"MAGNETIC MAGIC" ASP
"CHE-MYSTERY" ASP
"MAGNIFICENT MAGNETS" WS
"ELECTRICITY" WS
"MATTER OF FACT" WS

(8) **Science concepts**. The student knows that energy occurs in many forms. The student is expected to:

(A) differentiate among forms of energy including light, heat, electrical, and solar energy;

"HARNESSING HEAT" ASP
"ENERGY BURST" ASP
"ELECTRICITY" WS

(B) identify and demonstrate everyday examples of how light is reflected, such as from tinted windows, and refracted, such as in cameras, telescopes, and eyeglasses;

"LIGHTS, COLOR, ACTION!" ASP

(C) demonstrate that electricity can flow in a circuit and can produce heat, light, sound, and magnetic effects;

"CURRENT EVENTS" ASP
"ELECTRICITY" WS

(D) verify that vibrating an object can produce sound.

"SONIC SOUNDS" ASP
"GOOD VIBRATIONS" WS

(9) **Science concepts**. The student knows that adaptations may increase the survival of members of a species. The student is expected to:

(A) compare the adaptive characteristics of species that improve their ability to survive and reproduce in an ecosystem;
(B) analyze and describe adaptive characteristics that result in an organism's unique niche in an ecosystem; and
(C) predict some adaptive characteristics required for survival and reproduction by an organism in an ecosystem.

"ALL ABOUT ANIMALS" ASP
"ECOSYSTEMS" WS

(10) **Science concepts**. The student knows that likenesses between offspring and parents can be inherited or learned. The student is expected to:

(A) identify traits that are inherited from parent to offspring in plants and animals; and
(B) give examples of learned characteristics that result from the influence of the environment.

R&D IS DEVELOPING NEW PROGRAMS. SOME MAD SCIENCE PRE- AND POST ACTIVITIES FOR TEACHERS AND STUDENTS MAY MEET THESE REQUIREMENTS.

(11) **Science concepts**. The student knows that certain past events affect present and future events. The student is expected to:

(A) identify and observe actions that require time for changes to be measurable, including growth, erosion, dissolving, weathering, and flow;
(B) draw conclusions about "what happened before" using data such as from tree-growth rings and sedimentary rock sequences; and
(C) identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources.

"EARTHWORKS" ASP
"MINERAL MANIA" WS
"BLACK AND BLUE OCEANS" WS

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

(A) interpret how land forms are the result of a combination of constructive and destructive forces such as deposition of sediment and weathering;
(B) describe processes responsible for the formation of coal, oil, gas, and minerals;

"EARTHWORKS" ASP
"MINERAL MANIA" WS

(C) identify the physical characteristics of the Earth and compare them to the physical characteristics of the moon;

"PLANETS AND MOONS" ASP

(D) identify gravity as the force that keeps planets in orbit around the Sun and the moon in orbit around the Earth.

"NASA AFSE – ALL" ASP
"GREAT GRAVITY" ASP