Bloomingdale School District

Bloomingdale, NJ

Science
Grades K-4

Adopted: September

2017

Revised: August 2018

Grades K-4 Science is aligned to the NJSLS-S which are correlated to the NJSLS-ELA and NJSLS-M. There is a focus on learning science through investigation and through reading non-fiction texts and inquiry-based science exploration.

Science Department

Bloomingdale School District

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I. Course Synopsis

Our elementary science program reflects and integrated, thematic approach to the study of the field of science which supports the philosophy of the NJSLS-S. Students will develop an understanding of the core principles of physical, earth, space, and life science while engaging in engineering and technology through exposure to rich, non-fiction text.

II. Philosophy & Rationale

This course has been aligned to and developed with the NJSLS-S as its focus.

All NJSLS-S aligned courses in the Bloomingdale Schools demonstrate a commitment preparing students to become college and career ready as well as the other guiding assumptions of the Frameworks for Science Education (NRC, 2011) and the NJSLS-S including

- Students are born investigators;
- Science instruction should focus on core ideas and practices;
- An understanding of science develops over time;
- Science and engineering require both knowledge and practice;
- Science education must connect to students' interests and experiences; and
- Promoting equity for all students must be a focus of science education.

Additionally, all NJSLS-S aligned courses in the Bloomingdale Schools integrate the three dimensions discussed in the Frameworks for Science Education and the NJSLS-S, including

- Science & Engineering Practices which describe behaviors that scientists engage in as they investigate and build models and theories about the natural world and the key set of engineering practices that engineers use as they design and build models and systems; (NGSS PDF)
- Cross Cutting Concepts which link all domains of science and provide an organizational schema for interrelating knowledge from various science fields into a coherent and scientifically-based view of the world; (NGSS PDF) and
- Disciplinary Core Ideas which focus and unite K-12 science, have a broad importance across multiple sciences or engineering disciplines or are a key organizing concept within a single discipline; provide a key tool for understanding or investigating more

complex ideas and solving problems; relate to the interests and life experiences of students; are connected to societal or personal concerns that require scientific or technological knowledge; and are teachable and learnable over multiple grades at increasing depth and sophistication. (NGSS PDF)

Since coherence is a main dimension of the NJSLS-S, consider reviewing the "story line" for the middle school physical science, life science, earth and space science, and engineering, technology and applications of science, as well as the high school physical science, life science, earth and space science, and engineering, technology and application of science for a full picture of the NJSLS-S philosophy.

As described in the NJSLS-S, technical writing and reading non-fiction is also a focus of our elementary science curricula as required by the NJSLS-ELA and Math. Students are expected to think critically about data they collect or read about and then express their thoughts through text-based narratives, journal entries, short-constructed response, argument-based writing, and/or in-class discussion.

Differentiated instruction for students at different levels of achievement and specific learning needs (e.g. special education, English Language Learners (ELL), at-risk, and Gifted & Talented) is embedded in targeted scaffolding based on knowledge of each student's interests, needs, and assessment data, including, but not limited to, in class formative and summative assessments.

When deemed appropriate, teachers will engage students in purposeful paired discussions to share information more effectively, such as the "turn and talk" (Harvey & Daniels, 2009). "Text annotation" could be used, for example to optimize reading comprehension (Daniels & Steineke, 2010)

III. METHODS OF INSTRUCTION

I. INQUIRY METHOD OR HANDS-ON INVESTIGATIONS

II DEMONSTRATIONS PERFORMED BY THE TEACHER AND/OR STUDENT III LECTURE

IV CLASS DISCUSSION

V. LAB MANUAL AND/OR TEACHER MADE SHEET ASSIGNMENTS

IV. METHODS OF STUDENT EVALUATION

Teacher observation analysis of:

I. BEHAVIOR DURING HANDS-ON ACTIVITIES

II. EFFORT, SERIOUSNESS OF PURPOSE, PROPER USE OF EQUIPMENT, ATTITUDE IN GROUP

III. PARTICIPATION IN LEARNING CENTERS OR LAB INVESTIGATIONS

- A. Class discussions
- B. Problem-solving sessions
- C. Technology software (practice and assessment, internet, data wonders)

IV. LABORATORY WORK

- A. Safety is followed at all times
- B. Organized materials in desk area

V. LABORATORY MANUALS AND/ OR LAB REPORTS

- A. Organization of data/graphing of data if necessary
- B. Communication of data is clear
- C. Development of logical conclusions

VI. HOMEWORK

VII. TESTS AND QUIZZES

VIII. BENCHMARK ASSESSMENTS

Bloomingdale School District

Bloomingdale, NJ

Science
Grade K

Adopted: September

2017

Revised: August 2018

Kindergarten Science is aligned to the NJSLS-S which are correlated to the NJSLS-ELA and NJSLS-M. There is a focus on learning science through investigation and through reading non-fiction texts and inquiry-based science exploration.

Science Department

Scope & Sequence

The Kindergarten Science program consists of four thematic units reflective of the NJSLS-S. Each unit develops new content with consistent emphasis on the science and engineering processes, disciplinary core ideas, and cross cutting concepts reflective of the Next Generation Science Standards and the Frameworks for Science Education.

*Each Kindergarten rotation is approximately 5 weeks long. The following scope and sequence aligns with the **Knowing Science** program. Each row listed below should last approximately one 40 minute lesson/session. Each rotation is comprised of 15 lessons/sessions which are considered essential to students' development as learners. Following these 15 lessons/sessions, optional "enrichment" lessons are listed which may be used at the teacher's discretion. Buffer weeks may be used for enrichment or to catch up on essential sessions.*

Rotation 1
Weather (9 Essential Sessions) / **Sensational Senses** (6 Essential Sessions)

Rotation 2
Measurement (8 Essential Sessions) **/ Motion & Forces** (5 Essential Sessions)

Rotation 3
Living Things (10 Essential Sessions) / **Sunlight & Energy** (4 Essential Sessions)

Optional
Taking Care of the Earth (Earth Day) (2 Enrichment Sessions)

*Teachers should refer to the Science Pacing Chart for specific lessons/sessions which correlate with this curriculum. The spiral-bound teacher's guide includes detailed instructions for each inquiry-based lesson.

Rotation 1: Weather & Sensational Senses

Enduring Understanding:

1. Weather patterns can be observed over time.
2. Local weather forecasting can be used to help us prepare for severe weather.
3. We use our senses to explore and understand.

Essential Questions:

1. How are patterns of weather observed?
2. How can weather forecasts help us be prepared for severe weather?
3. How do we use our senses?

Learning Objectives:

K-ESS2-1

Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in

Learning Target: Observe and describe weather, temperature, wind speed, precipitations, clouds, and analyze weather data.

K-E SS3-2

Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.* [Clarification Statement: Emphasis is on local forms of severe weather.]

Learning Target: Use data to predict severe weather.

Define and apply knowledge of sight, touch, hearing, smell, and taste.

Learning Target: Use senses to collect data.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to the weather.

NJSLS-Literacy: Students will make observations using their five senses to add details in their drawing and writing during Readers/Writers Workshop.

*The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2 : Explore careers directly related to this unit.

Rotation 2: Measurement / Motion & Forces

Enduring Understanding:

1. A push or pull will change the motion of an object.
2. People can work together to design a solution to a problem.

Essential Questions:

1. How will a push or a pull affect an object?
2. How can a push or pull be applied to an object to change its direction?

Learning Objectives:

Make observations which are quantitative in nature, by measuring height and length, using standard units and then a measuring tape, to prepare to measure the effects of various forces.
Learning Target: Measure accurately using standard units. Compare the concepts of motion and speed.

K-PS-2-1
Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.]
Learning Target: Differentiate between pushes and pulls and explain the concept of a force.

K-PS-2-2
Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.* [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.]
Learning Target: Relate force with motion.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to the force.

NJSLS-Literacy: Students will interpret non-fiction anchor books related to the science content. The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2 : Explore careers directly related to this unit.

Rotation 3: Living Things / Sunlight & Energy

Enduring Understanding:

1. Plants and animals are alive. They need certain things to grow.
2. The places where a plant or animal lives is directly related to what it needs to survive.
3. Plants and animals may change the environment to meet their needs.
4. Sometimes, humans change our environment too much to meet our needs.
5. Heat from the sun can have different effects on the Earth's surface.

Essential Questions:

1. How similar are the needs of plants and animals?
2. How are the places where animals and plants live related to their needs?
3. How do plants and animals change their environment to meet their needs?
4. How can we reduce impact of human changes on the Earth?

Learning Objectives:

K-LS1-1

Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]

Learning Targets: Define living and non-living things. Define the needs of living things.

K-ESS2-2

Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

Learning Target: Explain how living things change the environment to survive. Our focus will be on plants.

K-ESS3-1

Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

K-ESS3-3

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.* [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

Learning Target: Explain how we depend on Earth and how we can take care of it.

K-PS3-1

Make observations to determine the effect of sunlight on Earth's surface. [Clarification Statement: Examples of Earth's surface could include sand, soil, rocks, and water] [Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.]

Learning Target: Explain that the sun is a source of energy which warms material.

K-P S3-2

Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.* [Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.]

Learning Target: Engineer a product to reduce warming effects of the sun.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to the energy and living things.

NJSLS-Literacy: Students will interpret non-fiction anchor books related to the science content. The

pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2: Explore careers directly related to this unit.

Course Materials

Knowing Science is a curriculum resource which provides each classroom with a variety of mentor books, a teacher's guide, and inquiry supplies, which should be used along with this curriculum. A pacing guide is provided to teachers on the Google Share Drive.

Each classroom has been provided sets of non-fiction leveled readers and shared reading books to provide students and teachers with content knowledge.

Assessments

Assessment of student learning in science at the elementary level should be formative in nature. Rubrics are provided in the Knowing Science program. The focus of assessment should be of students mastery of the Science and Engineering Processes of the NJSLS-S. The teacher should keep in mind the expected progression of their understandings.

See the pages titled, "Assessing Student Learning" within each unit of the Knowing Science spiral-bound teacher guide.

Bloomingdale School District

Bloomingdale, NJ

Science
Grade 1

Adopted: September

2017

Revised: August 2018

Grade 1 Science is aligned to the NJSLS-S which are correlated to the NJSLS-ELA and NJSLS-M. There is a focus on learning science through investigation and through reading non-fiction texts and inquiry-based science exploration.

Science Department

Scope & Sequence

The First Grade Science program consists of three thematic units reflective of the NJSLS-S. Each unit develops new content with consistent emphasis on the science and engineering processes, disciplinary core ideas, and cross cutting concepts reflective of the Next Generation Science Standards and the Frameworks for Science Education.

*Each First Grade rotation is approximately 5 weeks long. The following scope and sequence aligns with the **Knowing Science** program. Each row listed below should last approximately one 40 minute lesson/session. Each rotation is comprised of 13-15 lessons/sessions which are considered essential to students' development as learners. Following these 13-15 lessons/sessions, optional "enrichment" lessons are listed which may be used at the teacher's discretion. Buffer weeks may be used for enrichment or to catch up on essential sessions.*

Rotation 1
Parents and Heredity (8 Essential Sessions) / **Inspired by Nature** (4 Essential Sessions)

Rotation 2
Winter Survival Behaviors (5 Essential Sessions) **/ Earth's Patterns** (8 Essential Sessions)

Rotation 3
Measurement (4 Essential Sessions) / **Light & Sound** (9 Essential Sessions)

*Teachers should refer to the Science Pacing Chart for specific lessons/sessions which correlate with this curriculum. The spiral-bound teacher's guide includes detailed instructions for each inquiry-based lesson.

Rotation 1: Parents and Heredity / Inspired by Nature

Enduring Understanding:

1. Offspring demonstrate certain behaviors which help them survive. The places where a plant or animal lives is directly related to what it needs to survive.
2. Offspring (animal and plant) share some characteristics with their parents.
3. Humans can engineer solutions to problems through observing ways that other living things have developed ways to survive.

Essential Questions:

1. How do offspring behaviors aide in their survival?
2. How are offspring similar and different from their parents?
3. How can other organisms' external parts be used as models for human engineering?

Learning Objectives:

1-LS1-1.

Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]

Learning Targets: Animals and plants can serve as inspiration to solve problems which humans face.

1-LS1-2.

Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]

Learning Targets: Offspring and parents' behavior aid in the survival of the offspring.

1- LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

Learning Target: Offspring and parents' have some similar characteristics.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
Learning Target: Identify which human adaptations designed to solve problems have been inspired by animal adaptations.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to the animals, their offspring, and their adaptations.
NJSLS-Literacy: Students will interpret non-fiction anchor books related to the science content. The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2: Explore careers directly related to this unit.

Rotation 2: Winter Survival Patterns / Earth's Patterns

Enduring Understanding:

1. Objects in space, like the sun, moon, and starts, exhibit many patterns which affect us on Earth.
2. Patterns of movement of the Earth result in seasons and changes in the amount of day and night as the year continues.
3. Animals adjust their behavior during the winter in order to survive.

Essential Questions:

1. How can patterns in the sun, moon, and stars affect us on Earth?
2. How does the amount of daylight change with the Seasons?
3. How do different animals adjust their behavior during the winter to survive?

Learning Objectives:

K-LS1-1

Associate basic needs with winter behavior. Explain what happens to animals that hibernate, migrate, and remain active during the winter months. Give examples of animals that engage in each type of winter behavior.

Learning Target: Animals need to adjust behavior in order to survive.

1-ESS1-1.

Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]

Learning Target: There are patterns in the sun, moon, and stars that affect living things.

1- ESS1-2. Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

Learning Target: The sun shines longer at certain times of the year.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to the Seasons, sun, moon, and stars.

NJSLS-Literacy: Students will ask and answer questions about key details from texts. The

pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.3 : Explore careers directly related to this unit.

Rotation 3: Measurement and Light & Sound

Enduring Understanding:

1. Sound travels through vibrations.
2. Objects can only be seen when light shines on them.
3. Light travels differently depending on the material.
4. Light and sound can be used for communication.

Essential Questions:

1. How does sound travel?
2. How does light affect our ability to see an object?
3. How does light travel through different materials?
4. How can we use light for communication?

Learning Objectives:

1-PS4-1.

Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

Learning Target: Sound travels through vibrations.

1-PS4-2.

Make observations to construct an evidence-based account that objects can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]

Learning Target: Light travels differently through different materials.

1-PS4-3.

Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]

Learning Targets: Light travels differently through different materials.

1-PS4-4.

Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.* [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

Learning Targets: Light or sound can be used for communication.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will measure and make measurements comparing feet and standard units of measure.

NJSLS-Literacy: Students will engage in collaborative conversations with diverse partners. The

pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.3 : Explore careers directly related to this unit.

V. Course Materials

Knowing Science is a curriculum resource which provides each classroom with a variety of mentor books, a teacher's guide, and inquiry supplies, which should be used along with this curriculum. A pacing guide is provided to teachers on the Google Share Drive.

Each classroom has been provided sets of non-fiction leveled readers and shared reading books to provide students and teachers with content knowledge.

VI. Assessments

Assessment of student learning in science at the elementary level should be formative in nature. Rubrics are provided in the Knowing Science program. The focus of assessment should be of students mastery of the Science and Engineering Processes of the NJSLS-S. The teacher should keep in mind the expected progression of their understandings.

See the pages titled, "Assessing Student Learning" within each unit of the Knowing Science spiral-bound teacher guide.

Bloomingdale School District

Bloomingdale, NJ

Science
Grade 2

Adopted: September

2017

Revised: August 2023

Grade 2 Science is aligned to the NJSLS-S which are correlated to the NJSLS-ELA and NJSLS-M. There is a focus on learning science through investigation and through reading non-fiction texts and inquiry-based science exploration.

Science Department

Scope & Sequence

The Second Grade Science program consists of three thematic units reflective of the NJSLS-S. Each unit develops new content with consistent emphasis on the science and engineering processes, disciplinary core ideas, and cross cutting concepts reflective of the Next Generation Science Standards and the Frameworks for Science Education.

*Each Second Grade rotation is approximately 5 weeks long. The following scope and sequence aligns with the **Knowing Science** program. Each row listed below should last approximately one 40-minute lesson/session. Each rotation is comprised of 15 lessons/sessions which are considered essential to students' development as learners. Following these 15 lessons/sessions, optional "enrichment" lessons are listed which may be used at the teacher's discretion. Buffer weeks may be used for enrichment or to catch up on essential sessions.*

Rotation 1
Ecosystems: Habitats & Interactions
(16 Essential Sessions)

Rotation 2
Matter & Measurement
(16 Essential Sessions)

Rotation 3
Earth's Land & Water
(16 Essential Sessions)

*Teachers should refer to the Science Pacing Chart for specific lessons/sessions which correlate with this curriculum. The spiral-bound teacher's guide includes detailed instructions for each inquiry- based lesson.

Rotation 1: Ecosystems: Habitats and Interactions

Enduring Understanding:

1. Plants need sunlight and water in order to grow.
2. Animals disperse seeds and pollinate plants.
3. Plants and animals have a specific habitat that is beneficial for survival.

Essential Questions:

1. How do plants obtain their needs in order to grow?
2. How do animals disperse seeds and pollinate plants?
3. How do plants and animals adapt to survive in their environment?

Learning Objectives:

2-LS2-1.
Plan and conduct an investigation to determine if plants need sunlight and water to grow. [Assessment Boundary: Assessment is limited to testing one variable at a time.]
Learning Target: I can prove that plants require sunlight and/or water to grow.

2-LS2-2.
Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.* Learning Target: I can prove that animals have the ability to disperse seeds and pollinate plants.

2-LS4-1.
Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]
Learning Target: I can prove that the diversity of plants and animals in habitats is dependent on the resources available.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to plants, animals, and their habitats.

NJSLS-Literacy: Students will ask and answer questions about key details from texts.

The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2 : Explore careers directly related to this unit.

Rotation 2: Matter and Measurement

Enduring Understanding:

1. Solids, liquids, and gases have different properties.
2. The properties of materials should be considered when determining their best uses.
3. Materials can be changed into a new object.
4. Heating or cooling of a substance may cause changes that can be observed. Sometimes these changes are reversible and sometimes they are not.

Essential Questions:

1. How are materials classified?
2. How are the properties of materials related to their uses?
3. How can materials be changed into a new object?
4. How can heating, cooling, and mixing a substance change the state of matter?

Learning Objectives:

2-PS1-1.

Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]

Learning Target: I can prove that materials can be described and classified according to properties.

2-PS1-2.

Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]

Learning Target: I can prove that materials properties can make them best suited for a purpose.

2-PS1-3.

Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]

Learning Target: I can prove that heating, cooling or mixing a substance may cause reversible/irreversible changes that can be observed.

2-PS1-4.

Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. [Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]

Learning Target: I can determine if changes caused by heating or cooling can be reversed.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections

NJSLS- Math: Students will measure and make measurements comparing feet and standard units of measure.

NJSLS-Literacy: Students will engage in collaborative conversations with diverse partners.

The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.3: Explore careers directly related to this unit.

Rotation 3: Earth's Land and Water

Enduring Understanding:

1. Some changes to earth can occur quickly (ie: flood) or slowly (ie: erosion).
2. Changes to the Earth by water or wind can be prevented.
3. Many types of water and land exist.
4. Different types of water can be found at different locations on Earth.

Essential Questions:

1. How do earthquakes occur?
2. How can changes to the earth be prevented?
3. How can bodies of water and land be recognized?
4. How does the location of water on Earth affect its form?

Learning Objectives:

2-ESS1-1.
Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.]
Learning Target: I can prove that earthquakes can occur quickly or slowly.

2-ESS2-1
Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
Learning Target: I can prove that changes to the earth by erosion can be prevented.

2-ESS2-2.
Develop a model to represent the shapes and kinds of land and bodies of water in an area. [Assessment Boundary: Assessment does not include quantitative scaling in models.]
Learning Target: I can prove that different types of water and land exist.

2-ESS2-3.
Obtain information to identify where water is found on Earth and that it can be solid or liquid.
Learning Target: I can prove that water exists in different states.

K-2-ETS1-1.
Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2.
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3.
Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
2. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to Earth's land and water.
NJSLS-Literacy: Students will interpret non-fiction anchor books related to the science content.

The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2: Explore careers directly related to this unit.

Course Materials

Knowing Science is a curriculum resource which provides each classroom with a variety of mentor books, a
teacher's guide, and inquiry supplies, which should be used along with this curriculum. A pacing guide is provided to teachers on the Google Share Drive.

Each classroom has been provided sets of non-fiction leveled readers and shared reading books to provide students and teachers with content knowledge. For list of leveled readers and shared reading books, contact the Science Supervisor.

Assessments

Assessment of student learning in science at the elementary level should be formative in nature. Rubrics are provided in the Knowing Science program. The focus of assessment should be of students' mastery of the Science and Engineering Processes of the NJSLS-S. The teacher should keep in mind the expected progression of their understandings.

See the pages titled, "Assessing Student Learning" within each unit of the Knowing Science spiral-bound teacher guide.

Bloomingdale School District

Bloomingdale, NJ

Science
Grade 3

Adopted: September

2017

Revised: August 2018

Grade 3 Science is aligned to the NJSLS-S which are correlated to the NJSLS-ELA and NJSLS-M. There is a focus on learning science through investigation and through reading non-fiction texts and inquiry-based science exploration.

Science Department

Scope & Sequence

The Third Grade Science program consists of three thematic units reflective of the NJSLS-S. Each unit develops new content with consistent emphasis on the science and engineering processes, disciplinary core ideas, and cross cutting concepts reflective of the Next Generation Science Standards and the Frameworks for Science Education.

*Each Third Grade rotation is approximately 5 weeks long. The following scope and sequence aligns with the **Knowing Science** program. Each row listed below should last approximately one 40-minute lesson/session. Each rotation is comprised of around 15 lessons/sessions which are considered essential to students' development as learners. Following these 15 lessons/sessions, optional "enrichment" lessons are listed which may be used at the teacher's discretion. Buffer weeks may be used for enrichment or to catch up on essential sessions.*

Rotation 1
Life Cycles and Traits
(18 Essential Sessions)

Rotation 2
Weather and Climate
(12 Essential Sessions)

Rotation 3
Forces and Interactions
(10 Essential Sessions)

*Teachers should refer to the Science Pacing Chart for specific lessons/sessions which correlate with this curriculum. The spiral-bound teacher's guide includes detailed instructions for each inquiry- based lesson.

Rotation 1: Life Cycles and Traits

Enduring Understanding:

1. Reproduction is a necessary and important component of life cycles.
2. There are different stages of reproduction and development for plants and animals.
3. The life cycles of plants and animals have characteristics that include birth, reproduction, growth and death.
4. Animals need plants for oxygen, food, and shelter.
5. Plants needs animals for carbon dioxide, spreading seeds, and fertilization.
6. There is a relationship between group characteristics and an animal's ability to obtain food, defend themselves, and cope with changes in the environment.
7. Animal groups have different characteristics such as roles, functions, and size.

Essential Questions:

1. Why do plants and animals reproduce?
2. How do plants and animals grow and develop?
3. What is the relationship between plants and animals?
4. How does being in a group affect an animal's ability to survive?
5. In what ways do groups of animals differ?

Learning Objectives:

3-LS1-1.

Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] [*Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*]

Learning Target: I can develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

3-LS2-1.

Construct an argument that some animals form groups that help members survive.

Learning Target: I can construct an argument that some animals form groups that help members survive.

3-LS3-1.

Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
[Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.]
[*Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.*]

Learning Target: I can analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

3-LS3-2.

Use evidence to support the explanation that traits can be influenced by the environment.
[Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]

Learning Target: I can use evidence to support the explanation that traits can be influenced by the environment.

3-LS4-1.

Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
[Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.]

Learning Target: I can analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

3-LS4-2.

Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
[Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

Learning Target: I can use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

3-LS4-3.

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
[Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]

Learning Target: I can construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4.

Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.*
[Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [*Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse*

effect or climate change.]

Learning Target: I can make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

3. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
4. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections

NJSLS- Math: Students will measure and make measurements comparing feet and standard units of measure.

NJSLS-Literacy: Students will engage in collaborative conversations with diverse partners. The

pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.4 **:** Explore careers directly related to this unit.

Rotation 2: Weather and Climate

Enduring Understanding:

1. The weather is just the state of the atmosphere at any time, including things such as temperature,precipitation, air pressure and cloud cover. Daily changes in the weather are due to winds and temperatures.
   Seasonal changes are due to the Earth revolving around the sun.
2. Weather patterns repeat themselves at certain time of the year and studying these patter ns helps us predict future weather patterns.
3. Climate is the average weather usually taken over a 30year time period for a particular reg ionandtime period. Climate is not the same as weather. Climate is the average pattern of weather for a particular region.
4. Climate will affect a region by changing its landscape, habitats, lifeforms, and diversity.
5. There are several key factors that influence the ability to prepare for natural hazards.
6. Natural processes, such as weather related hazards, impact the environment.

Essential Questions:

1. How can recording weather patterns at different times help scientists make predictions for what kind of weather might happen next?
2. How does a range of climate affect an area over time?
3. 3. How can we prevent or reduce the damage and impact that extreme weather can have on our environment? Why do some areas survive and recover from natural hazards while other areas do not?
4. What is the relationship between natural processes and natural hazards?

Learning Objectives:

3-ESS2-1
Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]
Learning Target: I can represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

3-ESS2-2
Obtain and combine information to describe climates in different regions of the world.
Learning Target: I can obtain and combine information to describe climates in different regions of the world.

3-ESS3-1: Make a claim about the merit of a design solution that reduces the impacts of a weather related hazard. [Clarification Statement: Examples of design solutions to weather related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]
Learning Target: I can make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

3-ETS1-1
Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
Learning Target: I can define a simple design problem reflecting a need or a want that includes specific criteria for success or constraints on materials, time, or cost.

3-ETS1-2
Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
Learning Target: I can generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-ETS1-3
Plan and carry out fair tests in which variables are controlled and failure points are considered to

identify aspects of a model or prototype that can be improved.

Learning Target: I can plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

3. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
4. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to plants, animals, and their habitats.

NJSLS-Literacy: Students will ask and answer questions about key details from texts. The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.3 : Explore careers directly related to this unit.

Rotation 3: Forces and Interaction

Enduring Understanding:

1. If the forces acting on an object are balanced, the object will not move.
2. Forces of different strengths acting on an object will cause the object to move.
3. The motion of an object can be observed and measured
4. Motion can be predicted based on patterns observed in the past.
5. Objects in contact exert forces on one another.
6. Some forces can act on an object without making contact with the object.
7. The strength of a force depends on the distance, properties of the object and orientation (magnets).

Essential Questions:

1. How do forces affect motion?
2. How do forces and objects interact with one another?
3. How can patterns or measurements be used to observe motion?
4. How can magnets be used?

Learning Objectives:

3-PS2-1
Plan and conduct an investigation to provide evidenceof the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.] [Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.]
Learning Target: I can plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

3-PS2-2
Make observations and/or measurementsof an object's motionto provide evidence thatthat a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a seesaw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]
Learning Target: I can make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

3-PS2-3
Ask questions to determinecause and effect relationshipsof electric or magnetic interactions between two objects not in contact with each other.[Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]
Learning Target: I can ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

3-PS2-4
Define a simple design problemthat can be solved by applying scientific ideasabout magnets.* [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]
Learning Target: I can define a simple design problem that can be solved by applying scientific ideas about magnets.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

3. Use the pictorial glossary as a tool for your word wall, and pre-teach vocabulary to ELL or special education students.
4. Enrichment activities are described in the pacing guide which may be assigned to gifted students as homework assignments or during pull-out sessions.

Cross-Content Connections:

NJSLS- Math: Students will make observations, measure, collect data, and interpret data related to Earth's land and water.

NJSLS-Literacy: Students will interpret non-fiction anchor books related to the science content. The pacing chart lists NJSLS-M and NJSLS-ELA standards which are addressed in this unit.

8.1: Use technology to collect and analyze data and to communicate findings with local peers and peers from other classes.

9.2: Explore careers directly related to this unit.

Course Materials

Knowing Science is a curriculum resource which provides each classroom with a variety of mentor books, a teacher's guide, and inquiry supplies, which should be used along with this curriculum. A pacing guide is provided to teachers on the Google Share Drive.

Each classroom has been provided sets of non-fiction leveled readers and shared reading books to provide students and teachers with content knowledge.

Assessments

Assessment of student learning in science at the elementary level should be formative in nature. Rubrics are provided in the Knowing Science program. The focus of assessment should be of students' mastery of the Science and Engineering Processes of the NJSLS-S. The teacher should keep in mind the expected progression of their understandings.

See the pages titled, "Assessing Student Learning" within each unit of the Knowing Science spiral-bound teacher guide.

Bloomingdale School District

Bloomingdale, NJ

Science
Grade 4

Adopted: September

2017

Revised: August 2018

Grade 4 Science is aligned to the NJSLS-S which are correlated to the NJSLS-ELA and NJSLS-M. There is a focus on learning science through investigation and through reading non-fiction texts and inquiry-based science exploration.

Science Department

Scope & Sequence

The Fourth Grade Science program consists of three thematic units reflective of the NJSLS-S. Each unit develops new content with consistent emphasis on the science and engineering processes, disciplinary core ideas, and cross cutting concepts reflective of the Next Generation Science Standards and the Frameworks for Science Education.

*Each Fourth Grade rotation is approximately 5 weeks long. The following scope and sequence aligns with the **Knowing Science** program. Each row listed below should last approximately one 40-minute lesson/session. Each rotation is comprised of 15 lessons/sessions which are considered essential to students' development as learners. Following these 15 lessons/sessions, optional "enrichment" lessons are listed which may be used at the teacher's discretion. Buffer weeks may be used for enrichment or to catch up on essential sessions.*

Rotation 1
Earth's Surface Processes
(19 Essential Sessions)

Rotation 2
Energy
(10 Essential Sessions)

Rotation 3
Structure & Function
(17 Essential Sessions)

Rotation 4
Waves
(7 Essential Sessions)

*Teachers should refer to the Science Pacing Chart for specific lessons/sessions which correlate with this curriculum. The spiral-bound teacher's guide includes detailed instructions for each inquiry- based lesson.

Rotation 1: Earth's Surface Processes

Enduring Understanding:

1. Earthquakes, other natural disasters, and tectonics are responsible for the patterns and changes of Earth's rock formations. The locations of fossils show the order in which rock layers were formed.
2. Climate and weather shape the land and determine which living things are found in a region.
3. The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns.
4. Living things affect the physical features of a region.
5. Plate tectonics cause volcanoes and earthquakes.

Essential Questions:

1. Why does our planet look the way it does?
2. How and why do the Earth's features constantly change?
3. How does the Earth's constant change affect our future?

Learning Objectives:

4ESS11. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.] [Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.]

Learning Target: I can identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

4ESS21. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. [Clarification Statement: Examples of variables to test could include angle of slope in the downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing of water, cycles of heating and cooling, and volume of water flow.] [Assessment Boundary: Assessment is limited to a single form of weathering or erosion.]

Learning Target: I can make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

4ESS22. Analyze and interpret data from maps to describe patterns of Earth's features. [Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]

Learning Target: I can analyze and interpret data from maps to describe patterns of Earth's features.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
2. Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
3. Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
4. Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
5. Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
6. Use project-based science learning to connect science with observable phenomena.
7. Structure the learning around explaining or solving a social or community-based issue.
8. Provide ELL students with multiple literacy strategies.

Cross-Content Connections:

ELA/Literacy

W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4ESS11)

W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (4ESS11)

W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (4ESS11)

RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. (4ESS22)

Mathematics

MP.2 Reason abstractly and quantitatively. (4ESS21)

MP.4 Model with mathematics. (4ESS21)

MP.5 Use appropriate tools strategically. (4ESS21)

4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. (4ESS21)

4.MD.A.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4ESS21),(4ESS22

Rotation 2: Energy

Enduring Understanding:

- The faster an object is moving, the more energy it possesses.
- The slower an object is moving the less energy it possesses.
- Moving objects, sound, light and heat all have energy.
- Energy can be moved from place to place by moving objects through sound, light or electric currents.
- When objects collide, the energy can be transferred from one object to another which causes their motion/direction to change.
- Distance affects the speed of something.
- Sound is produced when energy is transferred during a collision.
- Electric currents can produce motion, sound, heat or light.

Essential Questions:

1: What is the relationship between speed and energy?
2: How is energy transferable?
3: What happens to the energy when objects collide?

Learning Objectives:

4PS31. Use evidence to construct an explanation relating the speed of an object to the energy of that object. [Assessment Boundary: Assessment does not include quantitative measures of changes in the speed of an object or on any precise or quantitative definition of energy.]
Learning Target: I can use evidence to construct an explanation relating the speed of an object to the energy of that object.

4PS32. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. [Assessment Boundary: Assessment does not include quantitative measurements of energy.]
Learning Target: I can make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4PS33. Ask questions and predict outcomes about the changes in energy that occur when objects collide. [Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.] [Assessment Boundary: Assessment does not include quantitative measurements of energy.]
Learning Target: I can ask questions and predict outcomes about the changes in energy that occur when objects collide.

4PS34. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. *[Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.] [Assessment Boundary: Devices should be limited to those that convert motion energy to electric energy or use stored energy to cause motion or produce light or sound.]
Learning Target: I can apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.

Cross-Content Connections:

ELA/Literacy

RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4PS31)

RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. (4PS31)

RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4PS31)

W.4.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (4PS31)

W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4PS32),(4PS33),(4PS34)

W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (4PS31),(4PS32),(4PS33),(4PS34)

W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (4PS31)

Mathematics

4.OA.A.3 Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (4PS34)

Rotation 3: Structure & Function

Enduring Understanding:

1. Plants and animals both have internal and external structures.
2. The structures of plants and animals help them grow, survive, and reproduce.
3. Sense receptors give different information to animals.
4. Information travels through the brain on different paths.
5. Animals use perceptions and memories to guide actions.

Essential Questions:

1. How are growth, behavior, and reproduction important to plant and animal life?
2. How do animals process the world around them?
3. How is survival for animals & plants similar/different?

Learning Objectives:

4LS11. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.[Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.] [Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.]

Learning Target: I can construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

4LS12. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. [Clarification Statement: Emphasis is on systems of information transfer.] [Assessment Boundary: Assessment does not include the mechanisms by which the brain stores and recalls information or the mechanisms of how sensory receptors function.

Learning Target: I can use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

1. Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
2. Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
3. Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
4. Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
5. Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
6. Use project-based science learning to connect science with observable phenomena.
7. Structure the learning around explaining or solving a social or community-based issue.
8. Provide ELL students with multiple literacy strategies.

Cross-Content Connections

<u>ELA/Literacy</u>
W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (4LS11)

SL.4.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes. (4LS12)

<u>Mathematics</u>
4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded across the line into matching parts. Identify line symmetric figures and draw lines of symmetry. (4LS1

Rotation 4: Waves

Enduring Understanding:

1. Energy can be transmitted from a source as waves.
2. Waves carry energy from one place to another.
3. The electromagnetic spectrum in increasing frequencies includes microwaves, infrared light, visible light, ultraviolet light, X rays and Gamma rays.
4. Waves have different properties and relationships.
5. The absorption and reflection of light waves by various materials result in the human perception of color.

Essential Questions:

1. How are wavelength, frequency and wave speed related?
2. How do technology and waves interact?
3. What do waves look like in the air, water, etc..
4. What is the relationship between vision and light?

Learning Objectives:

4PS41. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.[Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.] [Assessment Boundary: Assessment does not include interference effects, electromagnetic waves, nonperiodic waves, or quantitative models of amplitude and wavelength.]

Learning Target: I can develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.

4PS42. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.[Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.]

Learning Target: I can develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.

4PS43. Generate and compare multiple solutions that use patterns to transfer information.* [Clarification Statement: Examples of solutions could include drums sending coded information through sound waves, using a grid of 1's and 0's representing black and white to send information about a picture, and using Morse code to send text.]

Learning Target: I can generate and compare multiple solutions that use patterns to transfer information.

Suggested Activities & Suggested Modifications for Special Education Students, ELL Students, Students at Risk, and Gifted Students:

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.

Cross-Content Connections:

ELA/Literacy

RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4PS43)

RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4PS43)

SL.4.5 Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes. (4PS41),(4PS42)

Mathematics

MP.4 Model with mathematics. (4PS41),(4PS42)

4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. (4PS41),(4PS42

Course Materials

Knowing Science is a curriculum resource which provides each classroom with a variety of mentor books, a teacher's guide, and inquiry supplies, which should be used along with this curriculum. A pacing guide is provided to teachers on the Google Share Drive.

Each classroom has been provided sets of non-fiction leveled readers and shared reading books to provide students and teachers with content knowledge.

Assessments

Assessment of student learning in science at the elementary level should be formative in nature. Rubrics are provided in the Knowing Science program. The focus of assessment should be of students' mastery of the Science and Engineering Processes of the NJSLS-S. The teacher should keep in mind the expected progression of their understandings.

See the pages titled, "Assessing Student Learning" within each unit of the Knowing Science spiral-bound teacher guide.

SCIENCE - GRADES K-4

CURRICULUM ADDENDA FOR SPECIAL EDUCATION

This curriculum can be both grade and age appropriate for special education students and serves as a guide for the special education teacher in line with the district's written philosophy of special education concerning Programs for Educationally Disabled Students. Based on the Child Study Team evaluation and consultation with the parent and classroom teacher, an individualized education plan may include modifications to content, instructional procedures, student expectations, and targeted achievement outcomes of this curriculum document in accordance with the identified individual needs of an eligible student. This educational plan will then become a supplemental guide that the classroom teacher, parent, and Child Study Team will use to measure the individual student's performance and achievement.

CURRICULUM ADDENDA FOR ENGLISH LANGUAGE LEARNERS

This curriculum guide is appropriate and is implemented for all students according to age and grade, and is in line with the district's written philosophy of English language acquisition as stated within Policy #6409 concerning Bilingual Instruction and English as a Second Language Programs. In accordance with the New Jersey Administrative Code 6A:15, the contents herein provide equitable instructional opportunities for English Language Learners to meet the Core Curriculum Content Standards and to participate in all academic and non-academic courses.
Students enrolled in a Bilingual and/or an ESL program may, in consultation with the classroom teacher and Bilingual and/or ESL teacher, receive modifications to content, instructional procedures, student expectations and targeted achievement outcomes of this curriculum document in accordance with the students developmental and linguistic needs.

Modifications	**Special Education Students:** How to Adapt Your Teaching Strategies to Student Needs **English Language Learners:** How to adapt lessons for ELL students by Dr. Denise Furlong **Students at Risk of Failure:** Modifications and Accommodations for At Risk Students **Gifted Students:** Gifted Students Modifications

MODIFICATIONS/SUPPLEMENTARY AIDS IN REGULAR EDUCATION FOR SPECIAL EDUCATION STUDENTS

To the maximum extend appropriate, an educationally disabled pupil shall be educated with children who are not educationally disabled. In developing the basic plan of the individual education program, the Child Study Team, Regular Education teacher, Special Education teacher, and parent/guardian shall determine the appropriateness of regular education program options with support, such as curricular or instructional modifications.

The following list is only some of the curricular modifications and instructional techniques available for implementation in the Regular Education classroom.

Read tests orally, record student response; allow test retakes
Reduce the amount of written work or class work by one half
Grade student on what is handed in, do not penalize for incomplete assignments / homework / spelling
Allow student to finish tests and quizzes during school, after school, or in the Resource Center; allow additional time for tests
Do not require student to make up work when absent
Provide preferential seating, study carrels
Keep desk free from extraneous materials
Provide adequate space for movement
Extend time for processing information
Cue student to stay on task
Establish an individual daily schedule
Break work into shorter segments
Rewriting tests / consider spacing and crowding
Test for content and knowledge in subject areas
Grading modification based on individual goals
Verbal cues and prompts
Proximity control
Logical consequences / natural reinforcers / immediate feedback
Augmentative communication systems (i.e., Alpha Talker)
Books on tape / study guides
Differentiated activities / assignments
Homework Clubs, homework assignment pads
Vary test formats; short answers, matching, essay
Alternative response modes: points, writes, circles
Curriculum-based assessment
Peer tutoring : Individual and Classwide models
Cooperative learning groups
Advance organizers / outlines / study guides / mapping guides
Note-taking assistance / note-taking strategies
Rephrasing/redirecting /'preview' strategies / mnemonic devices
Computer assisted instruction
Assistive technology devices
Math: calculator, tables, number lines, manipulatives
Vary input: lecture, demonstration, simulations
Vary output: oral , written games, role plays
Vary questioning techniques
Parallel activity or curriculum
Provide summary of reading assignment: written / taped
Use checklist for review / study procedures
Behavioral contingency contracts / planned ignoring
Time out/ time away
Rules and Routine clear and consistent

ENGLISH LANGUAGE LEARNERS
GENERAL MODIFICATIONS FOR INSTRUCTIONAL ACTIVITIES

In order to ensure that English Language Learners are fully integrated into classroom life and can participate in all mainstream content areas, certain modifications and differentiated criteria shall be implemented. The following modifications can be utilized to suit the needs of English Language Learners in the mainstream classes outlined in this curriculum guide. After consultation with an ESL/Bilingual teacher and identification of student's proficiency level, the mainstream content area teacher can choose the appropriate strategies. Teachers should:

Beginning ESL students

- Allow students to illustrate answers or vocabulary words
- Allow students to translate vocabulary into native language and use native language dictionary.
- Speak slowly and clearly
- Use gestures, facial expressions, and visuals
- Ask yes/no questions
- Model: use concrete demonstration of abstract concepts
- Use manipulatives, props, pictures, and concrete objectives as much as possible
- Assign a native language partner/peer tutor
- Use study guides/outline chapters
- Monitor use of notebooks
- Differentiated grading and requirements

Beginning and Intermediate ESL students

- Simplify language/avoid idioms
- Use cooperative learning groups/set up peer tutoring pairs to encourage participation
- Use videos to reinforce content
- Tape record lessons and text readings
- Incorporate appropriate student software into planning and assignments
- Highlight key words and concepts
- Reduce the number of items for tests, class work, and homework
- Allow for repetition of material in various modes, (oral, written, visual, song)
- Allow verbal response in place of written
- Use manipulatives and hands-on activities
- Use graphic organizers, Venn diagrams and outlines to visually present information
- Encourage students to organize information through the use of such organizers
- Build background knowledge prior to lesson, students may not be aware of culturally specific events or objects
- Provide multiple choice options for open ended questions
- Use student as a resource whenever possible
- Differentiated grading and requirements

Advanced ESL students and recently exited ESL students (see above as needed)

- Score writing holistically (focus on the content of ideas rather than grammar)
- Use cooperative learning groups/set up peer tutoring pairs
- Highlight key words
- Encourage participation by fostering a supportive class climate and allowing for mistakes
- Use graphic organizers
- Modify and support writing assignments and assessments
- Build background knowledge through class discussions especially if material is culturally specific to the United States

SCIENCE K-4
CAREER INFUSION

I. **AWARENESS OF SELF**

A. Becomes aware of personal characteristics including strengths and limitations
   1. Considers careers in terms of strengths and limitations
   2. Accurately describes own scholastic abilities

B. Identifies a preferred lifestyle
   1. Understands that careers are related to lifestyle
   2. Identifies from a variety of life styles those most compatible with personal characteristics and needs.

C. Relates personal needs, values, and interests to behavior decisions and careers
   1. Explores personal interests.
   2. Explores careers in terms of interests and abilities.
   3. Understands that one's career can combine skills and interests.

II **IMPROVE HUMAN RELATIONSHIPS, INCREASE INTERPERSONAL SKILLS**

A. Reacts positively to constructive criticism.
   1. Gives and profits from constructive criticism.
   2. Use information gained through constructive criticism to effect change in self and others.

B. Works with others regardless of sex, race, or cultural differences.

C. Affirms the need for positive interpersonal relationships.
   1. Uses positive means for working with others.
   2. Assumes an active role in group situations.
   3. Understands the need for and maintains open communication.

III. **IMPROVE CAREER PLANNING AND DECISION-MAKING SKILLS**

A. Able to use decision-making processes.
   1. Obtains adequate and relevant information for decisions.
   2. Uses information sources effectively in making decision.

B. Demonstrates the ability to participate in group decision-making.
   1. Identifies the kinds of decisions that are made in groups.
   2. Participates effectively in group decision-making.

IV. **IMPROVE WORK, ATTITUDES, AND APPRECIATION FOR CAREER SUCCESS**

A. Demonstrates initiative and independence
   1. Engages in activities independently.
   2. Engages in independent study and independent tasks.

B. Exhibits positive work attitude.
   1. Identifies ways in which occupation, jobs, and work situations can be personally satisfying.
   2. Identifies ways in which workers can improve their work in terms of satisfaction.

C. Plans and completes tasks efficiently and thoroughly.
   1. Demonstrates self-discipline in completing tasks.
   2. Values planning in organizing work and completing jobs.

D. Uses health and safety habits.
   1. Explores safety aspects of jobs.
      2. Evidences concern for safety of self and others.

V. **IMPROVE PROFICIENCY OF COMMUNICATION AND COMPUTATIONAL SKILLS**

A. Understand how good listening skills apply to careers explored.
B. Uses writing and speaking skills effectively.
   1. Uses writing and speaking skills in and out of school.
   2. Uses diverse writing and speaking skills effectively.

VI. **GAIN KNOWLEDGE OF THE CAREER IMPLICATION OF SUBJECT MATTER**

A. Identifies career implication of school experiences.
   1. Explores careers and plans school experiences in terms of personal interests and skills already learned.
   2. Applies course content to career interests.
B. Relates specific school experiences to job requirements.
   1. Understand career implication of specific subject matter.
   2. Explores career in terms of educational requirements.

VII. **ACQUIRE AND APPLY SOCIO-TECHNOLOGICAL-ECONOMIC-POLITICAL UNDERSTANDING**

A. Evidences technological understanding.
   1. Traces impact of technology on careers explored
   2. Acquires skills needed to work with technologies related to preferred Occupations

VIII. **INCREASE KNOWLEDGE OF CAREER AND OCCUPATIONAL INFORMATION**

A. Uses knowledge of personal values, interest, needs, and limitations to explore career options by relating personal characteristics to preferred occupations.
B. Develop awareness of a range of career options and their requirements by developing skills which can be combined in a number of ways in different careers.

IX. **MARKETABLE SKILLS AND ADAPTABILITY**

A. Understands effects of technological change.
   1. Explores emerging careers and occupations.
   2. Considers implications of future technological change on preferred occupations.

X. **LEISURE PREFERENCES**

A. Identifies personal leisure preferences.
   1. Relates values and interests to use of leisure time.
   2. Evaluates leisure activities in terms of personal values and goals.
B. Describes the role of leisure in living: pleasure, personal, social, intellectual development, health, and fitness.
   1. Assesses the value of hobbies and activities in personal development.
   2. Values leisure activities.

INTERDISCIPLINARY CONNECTIONS
AND ALIGNMENT TO TECHNOLOGY STANDARDS

TECHNOLOGICAL LITERACY

8.1 Educational Technology

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.

8.2 Technology Education, Engineering, Design and Computational Thinking - Programming

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

9.2 CAREER AWARENESS, EXPLORATION, AND PREPARATION

CONTENT AREA: 21st CENTURY LIFE AND CAREERS

STRAND A: CAREER AWARENESS

By the end of Grade 4, students will be able to:

9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.

9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.