Long Branch Public Schools
Long Branch Public Schools
240 Park Ave, Long Branch, New Jersey 07740

"Together We Can, Juntos Nós Podemos, Juntos Podemos"

Francisco E. Rodriguez
Superintendent of Schools

Jena Valdiviezo
6-12 Supervisor of Science

Curriculum Writing for Elementary Science
Scope and Sequence
Curriculum Mapping
2020-21

Committee Members:

Name	Position	Home School	Curriculum Responsibility	Grade Level Current
Jena Valdiviezo	Science Supervisor	District	ALL	Supervisor
Kelly Stone	STEM Teacher	George L. Catrambone	Kindergarten	K-5
Lisa Roesch	STEM Teacher	George L. Catrambone	Fourth	K-5
Kimberly Douglas	Special Education Teacher	Morris Ave	K-2	K-2
Holly Terracciano	Special Education Teacher	Gregory	3-5	3-5
Shaughnessy	1st Grade Teacher	George L. Catrambone	First	First
Morey	2nd Grade Teacher	George L. Catrambone	Second	Second
Farrell	5th Grade Teacher	Gregory	Fifth	Fifth
Marra	3rd Grade Teacher	Gregory	Third	Third

Long Branch Public Schools
Science Curriculum Meeting
2020-2021

1. **Welcome to the NGSS K-5 Curriculum Team**
    1. **Dr. V - Cell - 732-500-0650**
2. **Sign-In**
3. **Expectations**
4. **Master Curriculum Calendar**
    1. **General outline due ASAP**
    2. **Unit 1 - Draft Due Sunday May 9th**

5. **Time Sheets : 50 hours due May 20th**

6. **Model Curriculum**

7. **NGSS**

8. **Standards in NJ**

9. **Changes to NGSS standards in NJ**

10. **Understanding by Design Curriculum Model - Blank Template in folder**

a. **Unit Header**

i. **Course Title**
ii. **Grade**
iii. **Unit Title**
iv. **Unit Length**
v. **Summary/Overview**

b. **Standards – NGSS**
    1. **Math/ELA integration**
    2. **21st Century**
    3. **Technology**

c. **Learning Objective (SLOs)**

d. **Understandings (Students will understand or know...)**

e. **Essential Questions**

f. **Assessment Evidence**

i. **Formative**

ii. **Summative**

g. **Learning Activity**

. **Climate Change activities- All units must be aligned to the NJ Climate Change Standards and the Education for Sustainability Enduring Understandings**

1. **NJ Climate Change K-12 Standards**
2. **Cloud Institute Education for Sustainability Standards**

h. Instructional Considerations

. What it looks like in the classroom

i. Honors, ELL, SpEd

ii. Misconceptions

i. Resources

Lead Writers

Kindergarten - Stone
1st Grade - Shaughnessy
2nd Grade- Morey
3rd Grade - Marra
4th Grade - Roesch
5th Grade - Farrell
K- 2 SpEd - Douglas
3-5: Terracciano

Smaller meeting this week and as needed: Tuesday??
K-1
2nd and 3rd
4th and 5th

Step 1 - Outline - bullet points - simple - email me
Step 2 - Unit 1 - look at those standards only Model Curriculum and NGSS
Step 3 - Meet again
Step 4 - Take a look at bio or 6th grade unit 1

Kindergarten Science Curriculum Outline

Unit 1: (10) Weather
Unit 2: (15) Effects of the Sun
Unit 3: (15) Basic Needs of Humans
Unit 4: (20) Basic Needs of Living Things
Unit 5: (15) Pushes and Pulls (May- June)
(Number of days) relates to the equivalent of 42 minute lessons each day.

Unit 1: Weather (**September**)

- **K-ESS3-2. 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.]
- **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.**
- **Weather Resources - https://weather.com/maps/ussatellitemap**
- **Generation Genious - Intro to weather https://www.generationgenius.com/videolessons/introduction-to-weather-video-for-kids/**
- **EfS Enduring Understandings**
  - **A Healthy and Sustainable**
  - **Future is Possible**
  - **Read the Feedback**
  - **Live by the Natural Laws**
  - **We are all Responsible**

Unit 2: Effects of the Sun (**October- November**)

- **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.*]*
- **K-PS3-2 Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.* *[Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.]***
- **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.**
- **SunWise Program - Free Resource - lots of activities from the EPA and NEEF Link to register- https://www.neefusa.org/sunwise**
- **Generation Genius - Sunlight Warms the Earth https://www.generationgenius.com/videolessons/sunlight-warms-the-earth-video-for-kids/**

- **EfS Enduring Understandings**
  - A Healthy And Sustainable
  - Future Is Possible
  - Healthy Systems Have Limits
  - Think 1000 Years
  - It All Begins With A Change In Thinking
  - Live By The Natural Laws

Unit 3 Basic Needs of Humans (**December - January**)

- **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.]*

- **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.**
- **EfS Enduring Understandings**
    - A Healthy And Sustainable Future Is Possible
    - We Are All In This Together
    - Healthy Systems Have Limits
    - Diversity Makes Our Lives Possible
    - It All Begins With A Change In Thinking
    - Live By The Natural Laws

Unit 4: Basic Needs of Living Things (**February-April**)

- **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.]*
- **K-ESS3-1 Use a model to represent the relationship between the needs of different plants and 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-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.]***
- ***Generation Genius -***
    - ***Living vs Non Living Things https://www.generationgenius.com/videolessons/living-vs-non-living-things-video-for-kids/***
    - ***Animals Need Food https://www.generationgenius.com/videolessons/animals-need-food-video-for-kids***
- **EfS Enduring Understandings**
    - A Healthy And Sustainable Future Is Possible
    - Healthy Systems Have Limits
    - Diversity Makes Our Lives Possible
    - It All Begins With A Change In Thinking
    - Live By The Natural Laws
    - We Are All Responsible

Unit 5: Pushes and Pulls (**May- June**)

- **K-PS2-1 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.]*
- **K-PS2-2 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.]***
- ***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.***
- ***Generation Genius - Pushes and Pulls https://www.generationgenius.com/videolessons/pushes-and-pulls/***
- **EfS Enduring Understandings**
    - We Are All In This Together
    - It All Begins With A Change In Thinking
    - We Are All Responsible

Grade Level Plans – First Grade

Outline for Grade 1 Science Curriculum

Marking Period 1 - Unit Title: Patterns of Changes in the Sky

- What patterns of change can be predicted when observing the sun, moon, and stars?
- What is the relationship between the amount of daylight and the time of year?
    - Healthy Systems Have Limits
    - It All Begins With A Change In Thinking. 11.
    - Live By The Natural Laws
    - We Are All Responsible

Marking Period 2 - Unit Title: Light and Sound/ Communicating with Light and Sound

- How can you prove that you can only see something when someone shines a light on it or if the object gives off its own light?
- What happens to a beam of light when you put different kinds of things in front of it? How would you design an experiment to prove your thinking?
- How do instruments (band) make sound?
- How can light or sound be used to communicate over a distance?
    - Healthy And Sustainable Future Is Possible
    - We Are All In This Together
    - Healthy Systems Have Limits
    - It All Begins With A Change In Thinking. 11.
    - Live By The Natural Laws

Marking Period 3 - Unit Title: Characteristics of Living Things

- How are young plants and animals alike and different from their parents?
- What types (patterns) of behavior can be observed among parents that help offspring survive?
    - A Healthy And Sustainable Future Is Possible
    - Healthy Systems Have Limits
    - Diversity Makes Our Lives Possible
    - It All Begins With A Change In Thinking
    - Live By The Natural Laws
    - We Are All Responsible

Marking Period 4 - Unit Title: Mimicking Organisms to Solve Problems

- How can humans mimic how plants and animals use their external parts to help them survive and grow?

- The shape and stability of structures of natural and designed objects are related to their function(s).
    - Recognize And Protect The Commons
    - Create Change At The Source Not The Symptom
    - Think 1000 Years
    - It All Begins With A Change In Thinking.
    - Live By The Natural Laws
    - We Are All Responsible

Grade Level Plans – Second Grade

Outline for Grade 2 Science Curriculum-Morey

Marking Period 1 - Unit Title: Earth's Land and Water and Changes to Earth's Land

- How can we identify where water is found on Earth and if it is solid or liquid?
- In what ways can you represent the shapes and kinds of land and bodies of water in an area?
- What do plants need to live and grow?
- What evidence can we find to prove that Earth events can occur quickly or slowly
- In what ways do humans slow or prevent wind or water from changing the shape of the land?
- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- Healthy Systems Have Limits
- Recognize And Protect The Commons
- Live By The Natural Laws
- We Are All Responsible

Marking Period 2 - Unit Title: Properties of Matter

- How can we sort objects into groups that have similar patterns? Can some materials be a solid or a liquid?
- What should the three little pigs have used to build their houses?
- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- Healthy Systems Have Limits
- Recognize And Protect The Commons
- Create Change At The Source Not The Symptom

- Think 1000 Years
- Live By The Natural Laws
- We Are All Responsible

Marking Period 3 - Unit Title: Changes to Matter

- In what ways can an object made of a small set of pieces be disassembled and made into a new object?
- Can all changes caused by heating or cooling be reversed?
- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- Think 1000 Years
- Live By The Natural Laws
- We Are All Responsible

Marking Period 4 - Unit Title: Relationships in Habitats

- How does the diversity of plants and animals compare among different habitats?
- What do plants need to live and grow?
- Why do some plants rely on animals for reproduction?
- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- Healthy Systems Have Limits
- Recognize And Protect The Commons
- Create Change At The Source Not The Symptom
- Think 1000 Years
- Live By The Natural Laws
- We Are All Responsible

General Outline:
3rd Grade Science Curriculum

Marking Period 1: Force, Motion, and Electricity

- Unit 2: Force and Motion

-How do equal and unequal forces on an object affect the object?

- Unit 3: Electrical and Magnetic Forces

-How can we use our understanding about magnets be used to solve problems?

- A Healthy And Sustainable Future Is Possible
  - We Are All In This Together
  - Healthy Systems Have Limits
  - Recognize And Protect The Commons
- Create Change At The Source Not The Symptom
  - It All Begins With a Change In Thinking.

Marking Period 2: - Life Cycles

- Unit 4: Traits
  - What kinds of traits are passed off from parents to offspring?
  - What environmental factors might influence the traits of specific organisms?

- Unit 5: Continuing the Cycle
  - Do all living things have the same life cycle?
  - What are the advantages of being different?
    - EFS –
  - A Healthy And Sustainable Future Is Possible
    - We Are All In This Together
    - Diversity Makes Our Lives Possible
    - Live By The Natural Laws
    - We Are All Responsible

Marking Period 3: Organisms and the Environment

- Unit 6: Organisms and the Environment
  - Why don't we see alligators in the arctic?
- Unit 7: Using Evidence to Understand change in Environments
  - What do fossils tell us about organisms and the environment in which they live?
    - EFS –
  - A Healthy And Sustainable Future Is Possible
    - We Are All In This Together
    - Diversity Makes Our Lives Possible
    - Live By The Natural Laws
    - We Are All Responsible

Marking Period 4: Weather and Climate

- Weather and Climate
  - What is the typical weather near our home?
  - How can we protect people from weather related hazards?
    - EFS –
  - A Healthy And Sustainable Future Is Possible
    - We Are All In This Together
  - Create Change At The Source Not The Symptom
    - Think 1000 Years
    - Read The Feedback
  - It All Begins With A Change In Thinking.
    - Live By The Natural Laws
    - We Are All Responsible

Fourth Grade Science Curriculum Outline

I. First Marking Period

A. Force and Motion

1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together
3. Healthy Systems Have Limits
4. Recognize And Protect The Commons
5. Create Change At The Source Not The Symptom
6. It All Begins With a Change In Thinking.

B. Using Engineering Design with Force and Motion Systems

1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together
3. Diversity Makes Our Lives Possible
4. Live By The Natural Laws
5. We Are All Responsible

II. Second Marking Period

C. Transfer of Energy

1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together
3. Diversity Makes Our Lives Possible
4. Live By The Natural Laws
5. We Are All Responsible

D. Waves and Information

1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together
3. Create Change At The Source Not The Symptom
4. Think 1000 Years
5. Read The Feedback
6. It All Begins With A Change In Thinking.
7. Live By The Natural Laws
8. We Are All Responsible

III. Third Marking Period

E. Structures and Functions

1. Healthy Systems Have Limits
2. Recognize And Protect The Commons
3. Reconcile Individual Rights With Collective Responsibilities

F. How Organisms Process Information

1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together
3. We Are All Responsible

IV. Fourth Marking Period

G. Earth Processes

1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together

3. Healthy Systems Have Limits
4. Create Change At The Source Not The Symptom
5. Think 1000 Years
6. We Are All Responsible

H. Weathering and Erosion
1. A Healthy And Sustainable Future Is Possible
2. We Are All In This Together
3. We Are All Responsible

Grade Level Plans – Fifth Grade

5th Grade Science Curriculum Writing 2021
Outline

- **MP1**
  - **Unit 5**
    - **Earth Systems**
      - 20 instructional days
      - 5-ESS2-1 and 5-ESS3-1.
        - **<u>5-ESS2-1 Earth's Systems</u>** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
        - **<u>5-ESS3-1 Earth and Human Activity</u>** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- Healthy Systems Have Limits
- Recognize And Protect The Commons
- Create Change At The Source Not The Symptom
- Think 1000 Years
- It All Begins With A Change In Thinking.
- Live By The Natural Laws
- We Are All Responsible
-
  - **Unit 4**
    - **Water on Earth**
      - 15 instructional days
      - 5-ESS2-2 and 5-ESS3-1.
        - **<u>5-ESS2-2 Earth's Systems</u>** Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
        - **<u>5-ESS3-1 Earth and Human Activity</u>** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
  - Unit 5 and 4 will be blended together and shortened to fit within the marking period. 5-PS1-3 and 5-PS1-1

- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- It All Begins With A Change In Thinking.
- Live By The Natural Laws
- We Are All Responsible
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- **MP2**
    - **Unit 1**
        - **Properties of Matter**
            - 15 instructional days
            -
                - **<u>5-PS1-1 Matter and Its Interactions</u>** Develop a model to describe that matter is made of particles too small to be seen.
                - **<u>5-PS1-3 Matter and Its Interactions</u>** Make observations and measurements to identify materials based on their properties.

- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- It All Begins With A Change In Thinking.
- Live By The Natural Laws
- We Are All Responsible
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    - **Unit 2**
        - **Changes in Matter**
            - 15 instructional days
            - 5-PS1-4 and 5-PS1-2.
                - **<u>5-PS1-2 Matter and Its Interactions</u>** Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
                - **<u>5-PS1-4 Matter and Its Interactions</u>** Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- It All Begins With A Change In Thinking.
- Live By The Natural Laws
- We Are All Responsible
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    - Unit 1 and 2 will be blended together and shortened to fit within the marking period.

- **MP3**
    - **Unit 6**
        - **Interaction within the Earth, Sun and Moon System**
            - 20 instructional days
            - 5-PS2-1, 5-ESS1-1, and5-ESS1-2.

            - **5-PS2-1 Motion and Stability: Forces and Interactions** Support an argument that the gravitational force exerted by Earth on objects is directed down.
            - **5-ESS1-1 Earth's Place in the Universe** Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.
            - **5-ESS1-2 Earth's Place in the Universe** Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
- e Are All In This Together
- Healthy Systems Have Limits
- Create Change At The Source Not The Symptom
- Think 1000 Years
- It All Begins With A Change In Thinking.
- Live By The Natural Laws
- We Are All Responsible
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- **MP4**
    - **Unit 3**
        - **Energy and Matter in Ecosystems**
            - 15 instructional days
            - 5-LS1-1, 5-LS2-1, and 5-PS3-1
                - **5-PS3-1 Energy**Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
                - **5-LS1-1 From Molecules to Organisms: Structures and Processes** Support an argument that plants get the materials they need for growth chiefly from air and water.
                - **5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- A Healthy And Sustainable Future Is Possible
- We Are All In This Together
- Recognize And Protect The Commons
- Reconcile Individual Rights With Collective Responsibilities
- Diversity Makes Our Lives Possible
- Live By The Natural Laws
- We Are All Responsible
-
        -
    - This unit will be at the end of the year to allow for teachers and students to grow plants in the classroom to support the lesson.