

Pequannock Township School District

Curriculum Syllabus

STEM- Grade 1

Course Description:

The First Grade science curriculum has been designed to continue to develop students' scientific practices relating to the world around them. This will be explored through formal laboratory experiences and informal demonstrations/labs. Other methods employed are reading, writing, computer searches, and other technologies that complement or enhance the topics studied. Lab reports using data gathered during experiments engenders critical thinking skills. Topics include: Patterns of Change in the Sky, Characteristics of Living Things, Mimicking Organisms to Solve Problems, Light and Sound, and Communicating with Light and Sound. Wherever possible, these topics are related to real life situations so that students see the value and importance of their studies.

Course Standards:

The following is a list of NJSLS that describe what students are expected to know and be able to do as a result of successfully completing this course. The following NJSLS are the basis of the assessment of student achievement. The learner will demonstrate mastery of:

- 1-ESS1-1: Use observations of the sun, moon, and stars to describe patterns that can be predicted.
- 1-ESS1-2: Make observations at different times of year to relate the amount of daylight to the time of year.
- 1-LS3-1: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
- 1-LS1-2: Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
- 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.
- 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.
- 1-PS4-1: Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
- 1-PS4-2: Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.
- 1-PS4-3: Plan and conduct investigations to determine the effect of placing

- objects made with different materials in the path of a beam of light.
- 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.*
 - W.1.2: Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)
 - W.1.7: Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-ESS1-1),(1-ESS1-2)
 - W.1.8: With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1),(1-ESS1-2)
 - W.2.6 :With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1)
 - W.3.2: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1)
 - RI.2.1: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1)
 - RI.3.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS3-1)
 - RI.3.2: Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1)
 - RI.3.3: Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1)
 - SL.1.1: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (1-PS4-1),(1-PS4-2),(1-PS4-3)
 - SL.2.5: Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)
 - SL.3.4: Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1)
 - MP.2: Reason abstractly and quantitatively. (1-ESS1-2)
 - MP.4: Model with mathematics. (1-ESS1-2)
 - MP.5: Use appropriate tools strategically. (1-ESS1-2)
 - 1.OA.A.1: Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations to represent the problem. (1-ESS1-2)
 - 1.MD.A.1: Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)
 - 1.MD.A.2: Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the

object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4)

- 1.MD.C.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (*1-ESS1-2*)
- 2.MD.D.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (*K-2-ETS1-1*)
- 3.MD.B.4: Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (*3-LS3-1*)

Scope and Sequence

| | Unit Title | STEM or Humanities | Weeks |
|---|--|--------------------|-------|
| 1 | My Responsibilities | Humanities | 4 |
| 2 | Getting Along with Others | Humanities | 4 |
| 1 | Patterns of Change in the Sky | STEM | 3-4 |
| 2 | Light & Sound - Communicating with Light & Sound | STEM | 5 |
| 3 | Me & My Country | Humanities | 4 |
| 4 | My Neighborhood Where We Live | Humanities | 2-3 |
| 5 | How Do Others Live | Humanities | 2-3 |
| 3 | Characteristics of Living Things | STEM | 5-6 |
| 4 | Mimicking Organisms to Solve Problems | STEM | 3-4 |

Assessments

Evaluation of student achievement in this course will be based on the following:

Formative Monitoring (Questioning / Discussion): Class/Group Discussion, Investigations, Simulations, Graphic Organizers, Teacher observation of student found evidence, Center activities, worksheets, class book

Summative Assessment (Quiz / Project / Report): Unit Assessment, Drawings, Sorting

Activities.

Curriculum Resources

Brain Pop

Faces of the Moon by: Bob Crelin

<https://www.youtube.com/watch?v=x-X2oNdMhg>

<https://www.youtube.com/watch?v=7t3aXb3LpWg>

<https://www.youtube.com/watch?v=-Oyv3Qg4a8k>

https://www.youtube.com/watch?v=sjvv3i3n_o

<https://www.youtube.com/watch?v=F1gLMMjpvRA>

<https://www.youtube.com/watch?v=R2y69y4pcN0>

Shadows by Carolyn B. Otto

<https://www.youtube.com/watch?v=8ZjpI6fgYSY>

<https://www.youtube.com/watch?v=ZanHgPprl-0>

<https://www.youtube.com/watch?v=INd6wQ3S38s>

<http://youtu.be/AfTp1ObzNHM>

[https://www.amazon.com/Seeds-Parts-Plant-Gemma-](https://www.amazon.com/Seeds-Parts-Plant-Gemma-McMullen/dp/1910512508/ref=sr_1_46?s=books&ie=UTF8&qid=1466606289&sr=1-46&keywords=plant+parts)

[McMullen/dp/1910512508/ref=sr_1_46?s=books&ie=UTF8&qid=1466606289&sr=1-](https://www.amazon.com/Seeds-Parts-Plant-Gemma-McMullen/dp/1910512508/ref=sr_1_46?s=books&ie=UTF8&qid=1466606289&sr=1-46&keywords=plant+parts)

[46&keywords=plant+parts](https://www.amazon.com/Seeds-Parts-Plant-Gemma-McMullen/dp/1910512508/ref=sr_1_46?s=books&ie=UTF8&qid=1466606289&sr=1-46&keywords=plant+parts)

<https://www.youtube.com/watch?v=7ls7ds5Aqi4>

<https://www.youtube.com/watch?v=PRog0Kv4ixI>

“Baby Animals” by Carol K. McAdam

[http://www.mnn.com/earth-matters/animals/stories/8-baby-animals-that-dont-look-like-](http://www.mnn.com/earth-matters/animals/stories/8-baby-animals-that-dont-look-like-their-parents)

[their-parents](http://www.mnn.com/earth-matters/animals/stories/8-baby-animals-that-dont-look-like-their-parents)

[http://betterlesson.com/lesson/resource/3258755/slideshow-plant-](http://betterlesson.com/lesson/resource/3258755/slideshow-plant-parents?from=resource_image)

[parents?from=resource_image](http://betterlesson.com/lesson/resource/3258755/slideshow-plant-parents?from=resource_image)

Are You My Mother? by P.D. Eastman.

Tender Moments in the Wild” or “Guess How Much I Love You” by [Sam Bratney and](#)

[Anita Jeram](#)

<https://www.youtube.com/watch?v=j7hkwjCfgc8>

https://www.youtube.com/watch?v=nhUL_idnlR0

<https://www.youtube.com/watch?v=1EfTFz8KaDE>

<http://betterlesson.com/lesson/resource/3276012/anchor-chart-how-do-animals-parents->

[take-care-of-their-](http://betterlesson.com/lesson/resource/3276012/anchor-chart-how-do-animals-parents-take-care-of-their-)

[http://betterlesson.com/lesson/resource/3287658/science-](http://betterlesson.com/lesson/resource/3276012/anchor-chart-how-do-animals-parents-take-care-of-their-http://betterlesson.com/lesson/resource/3287658/science-journal?from=resource_imagebabies?from=lessonsection_narrative)

[journal?from=resource_imagebabies?from=lessonsection_narrative](http://betterlesson.com/lesson/resource/3287658/science-journal?from=resource_imagebabies?from=lessonsection_narrative)

“The Tiny Seed” by Eric Carle

“The Dandelion Seed” by Joseph Anthony

https://youtu.be/wE-z_TJyziI

http://pbskids.org/video/?category=sid+the+science+kid&pid=ee0okxpout2nb3bthunv_opmsw84pzdm

<https://www.youtube.com/watch?v=4a8nGf9AXX0>

“How People Learned to Fly” by Fran Hodgkins.

<https://www.youtube.com/watch?v=FBUpnG1G4yQ>

“Nature got there First” by Phil Gates

<https://www.youtube.com/watch?v=EztvVOPvDAs#action=share>

The Listening Walk by Paul Showers

All About Sound by Lisa Trumbauer

All About Light by Lisa Trumbauer

Fireflies by Julie Brinckloe

Read the book Nothing Sticks like a Shadow

Home and School Connection

The following are suggestions and/or resources that will help parents support their children:

- Engage in reading with your child
- Visit a science museum
- Explore the outdoors
- Watch Bill Nye The Science Guy
- Plant a garden
- Grow plants indoors