

# Pequannock Township School District

## Curriculum Syllabus

### STEM- Kindergarten

#### Course Description:

The Kindergarten science curriculum has been developed to introduce students to 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: Pushes and Pulls, Weather, The Effects of the Sun, and Basic Needs of Living Things. 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:

- 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.
- 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.
- K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface.
- 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.
- K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.
- 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.
- K-ESS2-1: Use and share observations of local weather conditions to describe patterns over time.
- K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- 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.

- K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.\*
- 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.
- W.K.2: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS3-3)
- W.K.7: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(K-PS3-2)
- 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),(K-2-ETS1-3)
- W.2.8: Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1),(K-2-ETS1-3)
- 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.K.1: With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)
- 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.K.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)
- K.MD.A.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)
- K.MD.A.2: Directly compare two objects with a measurable attribute in common, to see which object has “more or”/”less of” the attribute, and describe the difference. (K-PS3-1)
- K.MD.B.3: Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)
- MP.2: Reason abstractly and quantitatively. (K-2-ETS1-1),(K-2-ETS1-3)
- MP.4: Model with mathematics. (K-2-ETS1-1),(K-2-ETS1-3)
- MP.5: Use appropriate tools strategically. (K-2-ETS1-1),(K-2-ETS1-3)
- 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),(K-2-ETS1-3)
- K.CC: Counting and Cardinality (K-ESS3-2)
- K.CC.A: Know number names and the count sequence. (K-ESS2-1)

## Scope and Sequence

	Unit Title	STEM or Humanities	Weeks
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	<b>Unit: My School, My Classroom</b>	Humanities	6 Weeks
	<b>Unit Plan: Effects of Sun</b>	Stem	3 weeks/15 days
	<b>Unit: My Family</b>	Humanities	6 Weeks
	<b>Unit Plan: Weather</b>	Stem	2 weeks/10 days
	<b>Unit: My Holidays and Traditions</b>	Humanities	7 Weeks
	<b>Unit Plan: Pushes and Pulls</b>	Stem	3 weeks/15 days
	<b>Unit: People in My World</b>	Humanities	6 Weeks
	<b>Unit Plan: Needs of Living Things and Humans</b>	Stem	7 weeks/35 days

## 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, Journaling, Design process, 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

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

The Sun (Scholastic News Nonfiction Readers) by Melanie Chrismer

<https://www.youtube.com/watch?v=wi-li6hprCs&safe=active>

The Three Little Pigs

Weather Words and What they Mean by Gail Gibbons.

<https://google.discoveryeducation.com/player/view/assetGuid/b55f4ca5-aedf-4171-ac2f-e85bc333081a>

[http://education.nationalgeographic.com/education/activity/extreme-weather-on-our-planet/?ar\\_a=1](http://education.nationalgeographic.com/education/activity/extreme-weather-on-our-planet/?ar_a=1)  
<http://www.scholastic.com/teacher/videos/teacher-videos.htm#3181358279001/2201785706001>  
<https://www.youtube.com/watch?v=tJQN4gsNBv8>  
<http://www.cspdc.org/programs/disaster/documents/KidsPreparednessGuide.pdf>  
**Cloudy with a Chance of Meatballs**  
<https://www.youtube.com/watch?v=LFZaXGz29yk>  
Give it a Push! Give it a Pull! By Jennifer Boothroyd  
Read **Push and Pull**, by Charlotte Guillian (Investigate series)  
[http://www.bbc.co.uk/schools/scienceclips/ages/5\\_6/pushes\\_pulls.shtml](http://www.bbc.co.uk/schools/scienceclips/ages/5_6/pushes_pulls.shtml)  
<http://www.bbc.co.uk/bitesize/ks1/science/forces/play/>  
Living or Nonliving? By Kelli Hicks  
[https://www.youtube.com/watch?v=Z\\_aAkuK\\_8nQ](https://www.youtube.com/watch?v=Z_aAkuK_8nQ)  
<https://www.youtube.com/watch?v=WDLC9igcfQw>  
<http://www.sesamestreet.org/videos?vid=1896>  
**Lily Learns About Wants and Needs** by Lisa Bullard  
<https://www.youtube.com/watch?v=9juC9JQ7Vxs>  
[https://www.youtube.com/watch?v=k4UDf3tF\\_O4](https://www.youtube.com/watch?v=k4UDf3tF_O4)  
<https://www.youtube.com/watch?v=9juC9JQ7Vxs>  
[http://www.coreknowledge.org/mimik/mimik\\_uploads/lesson\\_plans/1145/K\\_WhatAnimalNeed.pdf](http://www.coreknowledge.org/mimik/mimik_uploads/lesson_plans/1145/K_WhatAnimalNeed.pdf)  
<https://m.youtube.com/watch?v=dUBIQ1fTRzI>  
**Welcome Home Bear** by Il Sung Na  
[http://www.ducksters.com/science/ecosystems/world\\_biomes.php](http://www.ducksters.com/science/ecosystems/world_biomes.php)  
<http://www.oddizzi.com/teachers/explore-the-world/physical-features/ecosystems/>  
<https://www.youtube.com/watch?v=0Gm9zJS10-E>  
<http://www.slideshare.net/doujastar/where-do-plants-and-animals-live>  
<http://www.nature.org/newsfeatures/specialfeatures/animals/>  
[http://www3.canisius.edu/~grandem/animalshabitats/SOFTCHALKGOOD\\_print.html](http://www3.canisius.edu/~grandem/animalshabitats/SOFTCHALKGOOD_print.html) ,  
<http://kids.nationalgeographic.com/animals/>  
<http://learning-in-action.williams.edu/opportunities/elementary-outreach/science-lessons/kindergarten-science/>  
<http://www.slideshare.net/doujastar/where-do-plants-and-animals-live>  
<http://www.sylvialake.org/2006/06Winter/BeaverDamBefore.jpg>  
<http://www.sylvialake.org/2006/06Winter/BeaverDamAfter.jpg>  
<https://m.youtube.com/watch?v=Na2HYq11yuM>  
**The Beaver's Lodge: Building with Leftovers** by Adam Reingold  
<https://m.youtube.com/watch?v=1fkGqO0Xk94>  
[https://m.youtube.com/watch?v=CyE4\\_D6Fb\\_w](https://m.youtube.com/watch?v=CyE4_D6Fb_w)  
<http://imp-creations.deviantart.com/art/ivy-brick-wall-01-165938980>  
[https://upload.wikimedia.org/wikipedia/commons/a/a5/Gran\\_Pavillion\\_Ivy\\_01.JPG](https://upload.wikimedia.org/wikipedia/commons/a/a5/Gran_Pavillion_Ivy_01.JPG)  
<http://www.georgetowncollege.edu/ccrp/files/2014/04/How-do-interactions-happen-with-living-things-K-Science-Unit.pdf>  
<https://www.youtube.com/watch?v=NvH5XsNDZw4>

[http://www.sd38.bc.ca/area-counsellor-team/Resources/Supplemental\\_Lessons/Primary\\_Supplemental/Downloads/what\\_if\\_every\\_body\\_did\\_that.pdf](http://www.sd38.bc.ca/area-counsellor-team/Resources/Supplemental_Lessons/Primary_Supplemental/Downloads/what_if_every_body_did_that.pdf)

Dr. Seuss's The Lorax

<https://www.youtube.com/watch?v=w118HXa3HLk>

## **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