

Pequannock Township School District Curriculum Syllabus

STEM- Fifth Grade

Course Description:

The Fifth 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: 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:

- 5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.
- 5-PS1-2: 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.
- 5-PS1-3: Make observations and measurements to identify materials based on their properties.
- 5-PS1-4: Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
- 5-PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.
- 5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.
- 5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- 5-ESS1-1: Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth. [Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]
- 5-ESS1-2: 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.

- 5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- 5-ESS2-2: 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. [Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.]
- 5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
- RI.5.1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-PS2-1), (5-ESS1-1)
- RI.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS1-1)
- RI.5.8: Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). (5-ESS1-1)
- RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-PS2-1), (5-ESS1-1)
- W.5.1: Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-PS2-1), (5-ESS1-1)
- W.5.7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (5-PS1-2),(5-PS1-4)
- W.5.8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-PS1-2)(5-PS1-4)
- W.5.9: Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-PS1-2),(5-PS1-4)
- SL.5.5: Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS1-2)
- MP.2: Reason abstractly and quantitatively. (5-ESS1-1),(5-ESS1-2)
- MP.4: Model with mathematics. (5-ESS1-1,(5-ESS1-2))
- MP.5: Use appropriate tools strategically. (5-PS1-2)
- 5.NBT.A.2: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10. (5-ESS1-1)
- 5.G.A.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS1-2)
- 5.MD.A.1: Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real-world problems. (5-PS1-2)

Scope and Sequence

	Unit Title	STEM or Humanities	Weeks
1	Properties of Matter (model CER)	STEM	3 wks
2	Changes to Matter (Metric practice)	STEM	2 wks
1	Democracy & Civil Rights	Humanities	3 wks
3	Earth Systems	STEM	2 wks
4	Water on Earth	STEM	2.5 wks
2	Human Rights	Humanities	1.5 wks
3	Bias/Perspective Part A (4 weeks - 2 novels)	Humanities	8 wks
5	Interactions with Earth, Sun, & Moon Systems	STEM	8 wks
4	Prejudice & Injustice	Humanities	4 wks
6	Energy & Matter in Ecosystems	STEM	4 wks

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

Summative Assessment (Quiz / Project / Report): CER writing, Quiz, Unit Assessment, Labs, Models

Curriculum Resources

Brain Pop

<http://www.mcgrawhill.ca/school/applets/bcscience7/particle/>

<http://www.strangematterexhibit.com>

<https://www.youtube.com/watch?v=cmaaQYe96BU>

<http://somup.com/cD6toJGJQ>

<http://chemistry.about.com/cs/howtos/ht/boraxsnowflake.htm>

<https://www.stevespanglerscience.com/lab/experiments/glue-borax-gak/>

<https://www.stevespanglerscience.com/lab/experiments/homemade-ice-cream-sick-science/>
https://www.youtube.com/watch?v=zx0gXM_FkgE
<http://interlochenpublicradio.org/post/study-find-out-if-pine-marten-recovery-stalled>
<http://www.nature.org/newsfeatures/specialfeatures/animals/mammals/pine-marten.xml>
<http://www.ducksters.com/science/photosynthesis.php>
<https://www.youtube.com/watch?v=zYqbb5CNIyo&safe=active%203>
<https://www.youtube.com/watch?v=i0hKd5FWZOE>
<https://www.schooltube.com/video/59305b1fdd59475f9314/Magic%20School%20Bus%20Wet%20All%20Over>
http://www.globe.gov/documents/348830/350113/ElementaryGLOBE_EarthSystemsActivity1_en.pdf
<http://wcmu.pbslearningmedia.org/resource/phy03.sci.ess.eiu.galmoon/>
<http://wcmu.pbslearningmedia.org/resource/phy03.sci.phys.mfw.zweightlessness/>
<https://youtu.be/5gl8uxtQ0Ys>
http://www.alaskaguideservices.com/midnight_sun.html
<https://www.youtube.com/watch?v=l64YwNlIwr0>
<http://www.timeanddate.com/time/dst/>
<https://www.youtube.com/watch?v=AXGH8059BjY>
<http://www.sciencekids.co.nz/gamesactivities/lightshadows.html>
<https://www.youtube.com/watch?v=1SN1BOPLZAs>
<https://www.nwf.org/kids/family-fun/crafts/sundial.aspx>
<https://www.brainpop.com/science/space/lifecycleofstars/>

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
- Measure Rainfall
- Participate in a community clean up (Recycling, saving the Earth)