

Stem Curriculum

Content Area: **Science**
Course(s):
Time Period: **September**
Length: **Year**
Status: **Published**

Overview

STEM provides students with capability and capacity for young minds to be creative, curious, innovative and gain confidence with their education. Children are instinctively creative and designers with active imaginations to expand their minds. It is important to cultivate, encourage and develop these skills to make them successful in their education and beyond.

This curriculum will help foster a positive relationship with science, technology, engineering and math by providing kindergarten students with opportunity and ability to think critically, logically, creatively solve problems and confidence to immerse themselves with those around them. This will allow them to approach obstacles in and out of the classroom and prepare them with various concepts.

Learning Targets

I can:

- build with shapes.
- put shapes together to make bigger shapes.
- share what I see.
- use my senses to understand the world around me.
- show what direction an object will move with a push or pull.
- tell how hard I push or pull something makes it go faster or slower.
- learn about living and nonliving things by (asking an expert, using a book, making observations, doing an investigation, and watching a video).
- use my senses to tell about living or nonliving things.
- tell you what I learned using my senses.
- discover the cause and effect of pushing and pulling objects.
- change the speed and direction of a ball or other objects.
- describe the weather.

NJSLO for Stem

SCI.K-2-ETS1

Engineering Design

SCI.K-2-ETS1-1

Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the

development of a new or improved object or tool.

Asking Questions and Defining Problems

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

Ask questions based on observations to find more information about the natural and/or designed world(s).

Define a simple problem that can be solved through the development of a new or improved object or tool.

SCI.K-2.ETS1.A

Defining and Delimiting Engineering Problems

A situation that people want to change or create can be approached as a problem to be solved through engineering.

Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.

Before beginning to design a solution, it is important to clearly understand the problem.

SCI.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.

Developing and Using Models

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

Develop a simple model based on evidence to represent a proposed object or tool.

SCI.K-2.ETS1.B

Developing Possible Solutions

Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions, such as climate change, to other people.

Structure and Function

The shape and stability of structures of natural and designed objects are related to their function(s).

SCI.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.

Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

Analyze data from tests of an object or tool to determine if it works as intended.

SCI.K-2.ETS1.C

Optimizing the Design Solution

Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

Learning Plan, Activities and Resources

Month	Stem Activity Packet
September	September Back to School Challenges
October	October Challenges

November	<u>November Thanksgiving Challenges</u>
	<u>December Winter Challenges</u>
December	<u>December Christmas Challenges</u>
January	<u>January Challenges</u>
February	<u>February Challenges</u>
March	<u>March Challenges</u>
April	<u>April Spring Challenges</u>
May	<u>May Challenges</u>
June	<u>Water Bottle Flipping Challenge</u>

Choice Boards

Geoboards

Task Cards

Holidays

Snap Cubes

[Groundhogs Day](#)

[School days](#)

[Seasons Choice Boards with
Pictures](#)

[St. Patrick's Day 1](#)

[Flowers](#)

[St. Patrick's Day 2](#)

[Valentine's](#)

[Valentines Day](#)

Blocks

Fall

[Pattern Challenges](#)

[Monthly Choice Boards](#)

[Back to School](#)

[Build a...](#)

[Fall Patterns](#)

[Christmas](#)

Legos

Spring

[Lego 1](#)

[Spring](#)

[Lego 2](#)

Summer

[Popsicle Sticks](#)

[Summer](#)

Letters, Shapes and Numbers

[Letters](#)

[Letters, Shapes](#)

[Shapes 1](#)

[Shapes 2](#)

[2D Shapes](#)

Enduring Understandings

- Scientists discover the world around them, learn as much as they can, and share their learnings with others in order to solve problems.
- Scientists observe the world around them, label, and list their findings.
- In order to solve problems, scientists share their findings with others.
- Pushes and pulls can have different strengths and directions.
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.
- When objects touch or collide, they push on one another and can change motion.
- A bigger push or pull makes things speed up or slow down more quickly.
- A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems can have many acceptable solutions.
- Weather is the combination of sunlight, wind, snow, or rain, and temperature in a particular region at a particular time.
- Weather conditions can be observed and described as sunny, cloudy, rainy, foggy, snowy, stormy, windy, hot or cold. Weather observations can be made based on how we feel, what we see or hear, or by using weather measurement instruments such as thermometers.
- Changes in weather conditions can be recorded during different times of day, from day to day, and over longer periods of time (seasonal cycle).
- Repeated observations can show patterns that can be used to predict general weather conditions. For example, temperatures are generally cooler at night than during the day and colder in winter than in spring, summer or fall.
- Weather can be predicted by patterns.
- Weather affects decisions we make about clothing and activities.
- Some kinds of severe weather are more likely than others in a given region.
- Meteorologists forecast severe weather so that the communities can prepare for and respond to these events.

Essential Questions

- How can we examine the world around us and learn as much as we can?
- How can we observe, label, and list like a scientist
- What is weather? (cold/hot, humid/dry, windy, cloudy, precipitation)
- What tools do we use to measure weather? How do we use the tools?
- How does weather influence our clothing choices? How does weather influence our activity choices?
- How do weather patterns impact our lives?
- How do different strengths or directions of pushes and pulls affect the motion of an object?
- How can a design solution work to determine the speed or direction of an object with a push or a pull?

Career Readiness

Different types of jobs require different knowledge and skills.