

# Ridgewood Public Schools



## **K-5 SCIENCE CURRICULUM PROGRAM REVIEW**

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# Science Curriculum & Program Review Plan



- **Year One, 2015-2016:**

- Program Review, Research, and Recommendation; Curriculum Writing and/or Reaffirmation (6-12)

- **Year Two, 2016-2017:**

- Implementation of New, Revised, or Reaffirmed Curricula (6-12)
- Program Review, Research, and Recommendation (K-5)
  - October 2016: A committee of K-5 teachers and administrators evaluated new curriculum programs. TCI and Knowing Science were brought in to present. Knowing Science was selected.
  - February 2017: Stevens Institute of Technology presented the NGSS to K-5 during the professional development day.
  - April 2017: Knowing Science provided professional development on the cross-cutting concepts in the standards.

# The Ridgewood Public Schools Science Curriculum & Program Review Plan



## ● **Year Three, 2017-2018:**

- Complete Curriculum Writing in summer 2017 (K-5)
- Implementation of New, Revised, or Reaffirmed Curricula in September 2017 (K-5)
  - Employ professional development as needed.

## ● **Years Four and Five, 2018-2020:**

- Monitoring
  - Implementation continues.
  - Achievement and feedback are monitored.
  - Modifications are made if needed.

# Year Two Study - Timeline



## Program Selection

### ● Summer 2016

- Curriculum programs were reviewed: Knowing Science, FOSS, McGraw-Hill, Carolina Biological, and TCI

### ● November - December 2016

- A committee of K-5 teachers and administrators evaluated new curriculum programs. TCI and Knowing Science were brought in to present. Knowing Science was selected by the committee.

# Year Two Study - Timeline cont.

## Professional Development

### ●September 2016 - May 2017

- Joyce Cerbasi has visited each school four times to provide professional development on inquiry-based/constructivist teaching including high-level questioning techniques, feedback and collaboration, and the standards.

### ●February 2017

- February 2017: Stevens Institute of Technology presented to K-5 during the professional development day to introduce the NGSS and discuss the cross-cutting concepts and importance of inquiry-based instruction.

### ●March 2017

- Nancy Schultz presented the engineering practices and discuss how the cross-curricular approach to teaching math and science.

### ●April 2017

- April 2017: Knowing Science provided professional development on the cross-cutting concepts in the standards.

# Ridgewood Current K-5 Science Program



**WHAT'S NEW IN K-5 SCIENCE??**

# K-5 Instructional Shifts

## Grade Band: K-2

Classroom activities in Elementary School will look less like this:	And look more like this:
Students have infrequent exposure to science instruction or related activities.	Students engage with science concepts as a core part of instruction and are encouraged to connect lessons to their own personal experiences.
Students memorize the general structure and properties of matter.	Students use water and butter to investigate how some changes caused by heating or cooling can be reversed while others cannot.
Students examine insects or bugs on the playground or during special events such as science fairs.	Students observe the life cycles of beetles, butterflies, and pea plants to identify patterns that are common to all living things.
Students draw static pictures of the sun to demonstrate where it is at different times of the day.	Students support claims about the movement of the sun by identifying an outdoor object that receives direct sunlight, then tracing an outline of its shadow at three different times during the day.
Students have infrequent exposure to discussions or activities related to engineering design.	Students consider or apply engineering design principles throughout each grade level.
Student discussions and activities are disconnected from mathematics or English/Language Arts instruction.	Student discussions and activities are thoughtfully integrated with mathematics and English/Language Arts instruction.

# K-5 Instructional Shifts



## Grade Band: 3-5

Classroom activities in Elementary School will look less like this:	And look more like this:
Students have infrequent exposure to science instruction or related activities.	Students engage with science concepts as a core part of instruction and are encouraged to connect lessons to their own personal experiences.
Students learn that matter is made of particles.	Students collect data through activities, such as compressing air in a syringe, in order to create cognitive models of matter.
Students draw food webs for particular environments.	Students construct scientific arguments about how matter and energy move through ecosystems in different ways.
Students review the characteristics of various rocks and minerals.	Students gather evidence from rock formations to help determine the order in which rock layers were formed.
Students have infrequent exposure to discussions or activities related to engineering design.	Students consider or apply engineering design principles throughout each grade level.
Student discussions and activities are disconnected from mathematics or English/Language Arts instruction.	Student discussions and activities are thoughtfully integrated with mathematics and English/Language Arts instruction.



# K-5 Science Program Updates



- **Standards are grade specific K-5**
- **More Active Approach in Kindergarten**
  - Six units within the three foundations of Physical Science, Earth Science, and Life Science
- **Knowing Science**
  - Over 50 districts have adopted for 2017-2018
  - Very supportive of the NGSS
  - 5 E's: Engage, Explore, Explain, Elaborate, Evaluate
  - Kit materials are only 10% disposable

# Knowing Science: Units of Study



Grade	PHYSICAL	EARTH		LIFE
K	Measurement Motion & Forces	Weather Sunlight & Energy		Living Things Sensational Senses
1	Measurement Light and Sound	Earth's Patterns		Inspired by Nature Parents and Heredity
2	Matter Measurement	Fast & Slow Changes		Ecosystems Habitats & Interactions
3	Forces & Interactions	Weather & Climate		Life Cycle and Traits
4	Energy <b>Waves &amp; Properties*</b>	Earth Systems: Processes that Shape the Earth		Structure & Function
5	Structure, Properties & Interactions of Matter	Earth Surface: Processes	Space Systems: Stars and the Solar System	Matter & Energy in Organisms & Ecosystems

# Works Cited



- ❖ [HTTP://NEXTGENSCIENCE.ORG/NEED-STANDARDS](http://nextgenscience.org/need-standards)
- ❖ [HTTP://NEXTGENSCIENCE.ORG/SITES/DEFAULT/FILES/NEWS/FILES/OP-ED%20-%20DELAWARE%20-%20NEW%20SCIENCE%20STANDARDS%20TURN%20STUDENTS%20INTO%20THINKERS.PDF](http://nextgenscience.org/sites/default/files/news/files/op-ed%20-%20delaware%20-%20new%20science%20standards%20turn%20students%20into%20thinkers.pdf)
- ❖ <http://www.knowingscience.com/ngss-curriculum/kindergarten>