Standards and Correlation

6.23.2016 Action for A Cleaner Tomorrow

Learning Intentions/Success Criteria

Understand lesson development for “Action”

Understand lesson format

Identify standards support resources

What works in the classroom, and what do teachers need?

Research-based model for instruction: John Hattie

Standards-based

Learning Intentions/Success Criteria

DRAFT

Every Piece of Litter Counts

Learning Objective

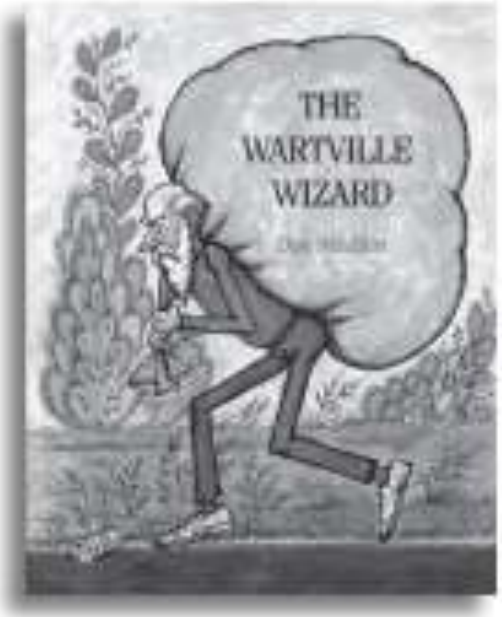
Students will:

- **Conduct surveys and take photographs** (upper-elementary grades);
- **Evaluate the effects of human population on air, water and land;**
- **Identify the four stages of problem solving** – problem identification, solution design, implementation and evaluation;
- **Analyze the benefits of solid waste management;**
- **Implement a plan to control litter**; and
- **Share the findings and new plan with the school.**

Present the Lesson

ENGAGE

Read aloud ***The Wartville Wizard*** by Don Madden. This story is about a tidy old man in the town of Wartville who realizes he can clean up all of the litter in his neighborhood once and for all. Watch a video of the story being read at – www.teachertube.com/video/the-wartville-wizard-49860.



GUIDED PRACTICE

CLOSURE

Students will develop a written solution to the litter problem, based on their observations, surveys and discussions.

INDEPENDENT PRACTICE

In their science journal, have students reflect about the following questions.

- **How does litter happen?**
- **Who is in control of litter?**
- **Is it important for our school grounds to be clean and litter free? Why?**
- **What are some ways you can take pride in the places where you live, play and learn?**
- **What are some ways to stop the problem of littering?**

S.C. Science Standards for Grades 7 & 8

7.EC.5	The student will demonstrate an understanding of how organisms interact with and respond to the biotic and abiotic components of their environments.
8.E.5.	The student will demonstrate an understanding of the processes that alter the structure of Earth and provide resources for life on the planet.
CONCEPTUAL UNDERSTANDING	
7.EC.5A	In all ecosystems, organisms and populations of organisms depend on their environmental interactions with other living things (biotic factors) and with physical (abiotic) factors (such as light, temperature, water, or soil quality). Disruptions to any component of an ecosystem can lead to shifts in its diversity and abundance of populations.
7.EC.5B	Organisms in all ecosystems interact with and depend upon each other. Organisms with similar needs compete for limited resources. Food webs and energy pyramids are models that demonstrate how energy is transferred within an ecosystem.
8.E.5C.	Humans depend upon many Earth resources – some renewable over human lifetimes and some nonrenewable or irreplaceable. Resources are distributed unevenly around the planet as a result of past geological processes.
PERFORMANCE INDICATOR(S)	
7.EC.5A.3	Analyze and intepret data to predict changes in the number of organisms within a population when certain changes occur to the physical environment (such as changes due to natural hazards or limiting factors).
7.EC.5B.2	Develop and use models (food webs and energy pyramids) to exemplify how the transfer of energy in an ecosystem supports the concept that energy is conserved.
7.EC.5B.3	Analyze and interpret data to predict how changes in the number of organisms of one species affects the balance of an ecosystem.
8.E.5C.1	Obtain and communicate information regarding the physical and chemical properties of minerals, ores and fossil fuels to describe the importance as Earth resources.

Depth of Knowledge (DOK): 1, 2

Primary Science and Engineering Practice (SEP)	
7.S.1A.4	Analyze and interpret data from informational texts, observations, measurements or investigations using a range of methods (such as tabulation, graphing or statistical analysis) to: 1) reveal patterns and construct meaning; or 2) support hypotheses, explanations, claims or designs.
7.S.1A.2	Develop, use and refine models to: 1) understand or represent phenomena, processes and relationships; 2) test devices or solutions; or 3) communicate ideas to others.
8.S.1A.8	Obtain and evaluate scientific information to: 1) answer questions; 2) explain or describe phenomena; 3) develop models; 4) evaluate hypotheses, explanations, claims or designs; or 5) identify and/or fill gaps in knowledge. Communicate using the conventions and expectations of scientific writing or oral presentations by: 1) evaluating grade-appropriate primary or secondary scientific literature; or 2) reporting the results of student experimental investigations.

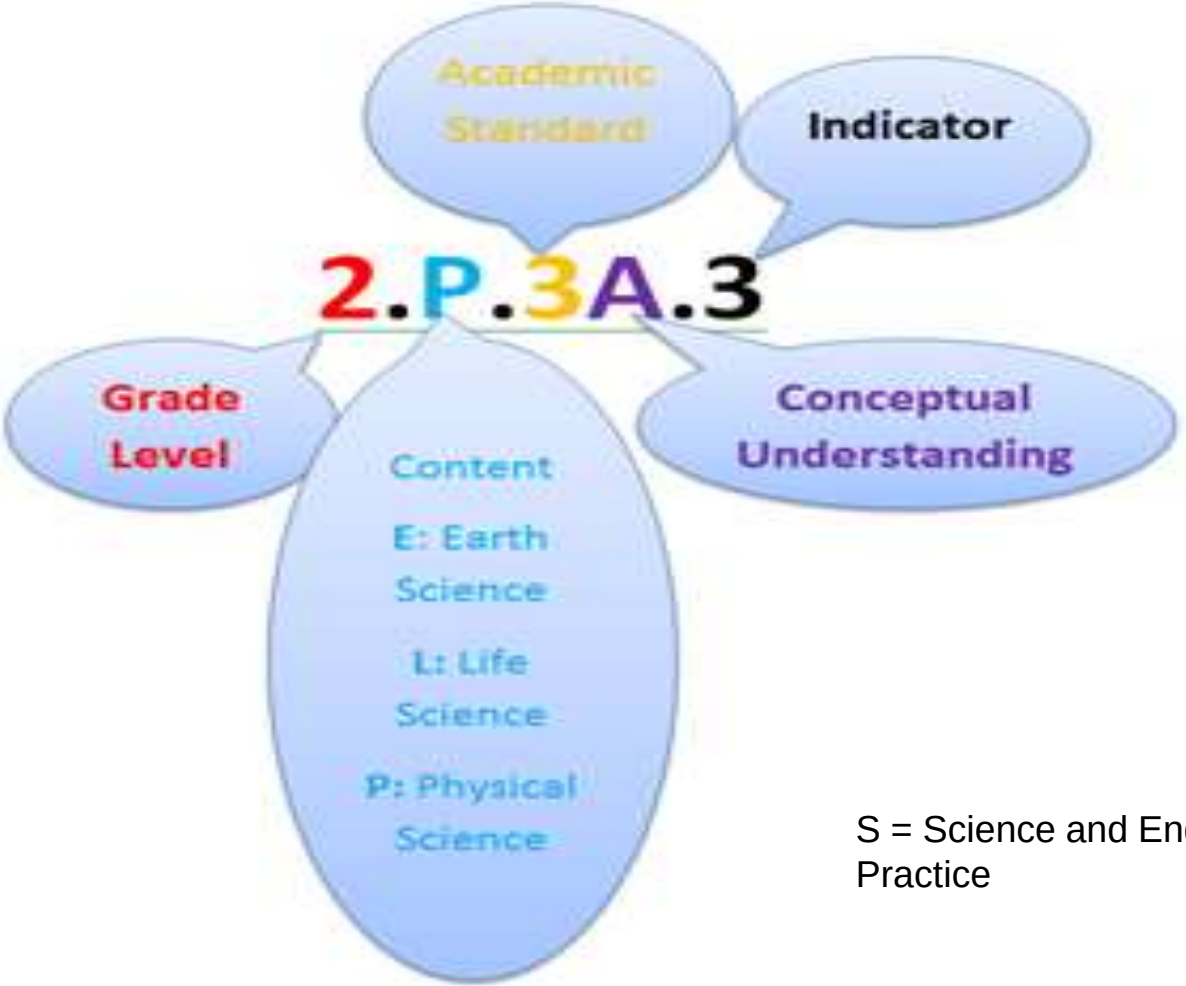
Connected SEPs			
S.1A.1	Ask Questions	S.1A.5	Use Mathematical & Computational Thinking
S.1A.2	Develop and Use Models	S.1A.6	Construct Explanations
S.1A.3	Plan and Carry Out Investigations	S.1A.7	Engage in Scientific Argument from Evidence
S.1A.4	Analyze and Interpret Data	S.1B.1	Construct Devices or Design Solutions

*Note Grade-Level progressions for Science and Engineering Practices

One last note about the correlation

Use at other grade levels

Making Sense of the 2014 Standards Notation



S = Science and Engineering Practice

Where are the support documents and how do I understand them?

http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/

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Standards

Crosswalk

Content Support Guide

Document 2.0

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Standard
5.P.2: The student will demonstrate an understanding of the physical properties of matter and mixtures.

Conceptual Understanding
5.P.2A Matter is made up of particles that are too small to be seen. Even though the particles are very small, the movement and spacing of these particles determines the basic properties of matter.

Performance Indicator
5.P.2A.1 Analyze and interpret data from observations and measurements of the physical properties of matter (including volume, shape, movement, and spacing of particles) to explain why matter can be classified as a solid, liquid or gas.

Assessment Guidance
The objective of this indicator is to *analyze and interpret data* from observations and measurements of the physical properties of matter (including volume, shape, movement, and spacing of particles) to explain why matter can be classified as a solid, liquid or gas. Therefore, the primary focus of assessment should be for students to *analyze and interpret data from informational texts, observations, measurements, or investigations using a range of methods (such as tabulation or graphing) to reveal patterns and construct meaning, or support hypotheses, explanations, claims, or designs* to explain why matter is classified as a solid, liquid or gas. This could include, but is not limited to students being challenged to observe and investigate the properties of solids, (volume, shape, movement, and spacing) of particles like cubes, blocks, balls, etc., then the students will use the data collected (evidence) to explain why a cube or block or ball is a solid. Students should continue by observing and investigating the properties of liquids, then gases.

In addition to *analyzing and interpreting data* from observations and measurements, students should *ask questions and plan and carry out investigations; use mathematics and computational thinking; engage in argument from evidence and construct explanations; develop and use models; construct devices or design solutions*.

Previous and Future Knowledge
- K.P.4 Properties of Matter
- 2.P.3 Solids, Liquids, Gases
- 3.P.2 Properties of Matter
- 7.P.2 Properties of Matter

Essential Knowledge
It is essential for students to analyze and interpret data demonstrating that matter is anything that has mass and volume. All matter is made up of very small particles too small to be seen. Even though these particles are very small, they give matter its basic properties.

Support Document 2.0

Extended Knowledge

- Name the particles of matter: atoms. Observe models of atoms.
- Identify that the volume of a gas changes when the pressure changes and identify how temperature changes can affect volumes of gases, liquids, and solids

Science and Engineering Practices

S.1.A.4

Science and Engineering Practices (SEPs)

http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/COMPLETE_2014SEPsGuide_SupportDoc2_0.pdf

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Public Comment Document 2.0

SCIENCE AND ENGINEERING PRACTICES
PERFORMANCE EXPECTATIONS
PERFORMANCE INDICATOR
S.1B.1: CONSTRUCT DEVICES OR DESIGN SOLUTIONS

GRADE LEVEL PROGRESSIONS

K.S.1B.1 **1.S.1B.1** **2.S.1B.1**	Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem, and (6) communicate the results.
3.S.1B.1 **4.S.1B.1** **5.S.1B.1**	Construct devices or design solutions to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the devices or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.
6.S.1B.1 **7.S.1B.1** **8.S.1B.1** **H.B.1B.1** **H.C.1B.1** **H.P.1B.1** **H.E.1B.1**	Construct devices or design solutions using scientific knowledge to solve specific problems or needs: (1) ask questions to identify problems or needs, (2) ask questions about the criteria and constraints of the device or solutions, (3) generate and communicate ideas for possible devices or solutions, (4) build and test devices or solutions, (5) determine if the devices or solutions solved the problem and refine the design if needed, and (6) communicate the results.

SPECIFIC CHANGES PER GRADE

- Starting in grade 3, performance expectations expand to include not only evaluating a device or solution but also *refining the design if needed*.
- Starting in grade 6, performance expectations expand to include the *use scientific knowledge* to solve specific problems or needs.

Support Document v1.0

Closure

Understand lesson development for “Action”

Understand lesson format

Identify standards support resources