

WAUCONDA SCHOOL DISTRICT 118

UNIT PLANNING ORGANIZER

Grade: Second Grade

Subject: Science

Unit: Life

Pacing:

STAGE 1 – DESIRED RESULTS

Big Ideas:

Essential Questions:

How can we describe matter?

How is matter alike and different?

How do heating and cooling change matter?

How are changes alike and different? (Reversible versus irreversible)

How can matter be combined and separated?

Next Generation Science Standards:

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. <p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Analyze data from tests of an object or tool to determine if it works as intended. <p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> Make observations (firsthand or 	<p>Structure & Properties of Matter</p> <ul style="list-style-type: none"> Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. Different properties are suited to different purposes. A great variety of objects can be built up from a small set of pieces. 	<p>Patterns</p> <ul style="list-style-type: none"> Patterns in the natural and human designed world can be observed. <p>Cause and Effect</p> <ul style="list-style-type: none"> Events have causes that generate observable patterns. Simple tests can be designed to gather evidence to support or refute student ideas about causes. <p>Energy and Matter</p> <ul style="list-style-type: none"> Objects may break into

<p>from media) to construct an evidence based account for natural phenomena.</p> <p>Engaging in Argument from Evidence</p> <ul style="list-style-type: none"> · Engaging in argument from evidence in K–2 	<p>Chemical Reactions</p> <ul style="list-style-type: none"> · Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. 	<p>smaller pieces and be put together into larger pieces, or change shapes.</p>
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STAGE 2 – EVIDENCE

Performance Tasks (What students know and will be able to do)	Assessments
<ul style="list-style-type: none"> • Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials Share.] 	<p>Summative One:</p> <p>Given a set of objects invent a system of sorting and communicate the rule for grouping. Support with evidence.</p> <p>Assessment One: Argue the placement of objects in a sort based upon their physical properties. Support your classification system with evidence.</p>

- **Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*** [Clarification

Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]

Make observations to construct an evidence based account of how an object made of a small set of pieces can be disassembled and made into a new object.

[Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]

Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

[Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.]

Formative:

- Describe objects by property
- Sort objects by rule
- Describe a solid
- Describe a liquid

Summative Two:

Construct a structure from materials and support with evidence why the materials were chosen.

Formative:

- State a purpose and determine if students can select the appropriate material

Summative Three:

Create a claim and support with evidence whether a change is reversible or irreversible.

Formative:

- Sort photos as reversible and irreversible

STAGE 3 – LEARNING PLAN (INSTRUCTIONAL PLANNING)

Suggested Resources/Materials/Informational Texts

Suggested Research-based Effective Instructional Strategies

Identifying Similarities and Differences - The ability to break a concept into its similar and dissimilar characteristics allows students to understand (and often solve) complex problems by analyzing them in a more simple way. Teachers can either directly present similarities and differences, accompanied by deep discussion and inquiry, or simply ask students to identify similarities and differences on their own. While teacher-directed activities focus on identifying specific items, student-directed activities encourage variation and broaden understanding, research shows.

Summarizing and Note Taking - These skills promote greater comprehension by asking students to analyze a subject to expose what's essential and then put it in their own words. According to research, this requires substituting, deleting, and keeping some things and having an awareness of the basic structure of the information presented.

Cues, Questions, and Advance Organizers Cues - Questions, and advance organizers help students use what they already know about a topic to enhance further learning. Research shows that these tools should be highly analytical, should focus on what is important, and are most effective when presented before a learning experience

Cooperative Learning - Research shows that organizing students into cooperative groups yields a positive effect on overall learning. When applying cooperative learning strategies, keep groups small and don't overuse this strategy-be systematic and consistent in your approach.

Reinforcing Effort and Providing Recognition - Effort and recognition speak to the attitudes and beliefs of students, and teachers must show the connection between effort and achievement. Research shows that although not all students realize the importance of effort, they can learn to change their beliefs to emphasize effort.

Taken from: *Marzano's Nine Instructional Strategies for Effective Teaching and Learning*

Academic Vocabulary/ Word Wall	Enrichment/Extensions/ Modifications
Tier Two Vocabulary: change, evidence, support, sort, purpose Tier Three Vocabulary: reversible, irreversible, solid, liquid, gas, construct, structure	