### Reading Focus: Literature, Informational
### Writing Focus: Opinion

#### Unifying Concept: Life Science

**Resource Kit:** Liquid Explorations / Supplemental Materials

#### Suggested Duration: 11 weeks

<table>
<thead>
<tr>
<th>Enduring Understanding:</th>
<th>Essential Questions:</th>
<th>Academic Vocabulary:</th>
</tr>
</thead>
</table>
| There are differences between living and non-living things. | • How are living things different from non-living things?  
• What basic needs do living things have in common?  
• How do characteristics of living things help them survive?  
• Why do plants and animals live in some places but not others? | Air  
Alive  
Animal  
Behavior  
Body part  
Characteristics  
Ears  
Environment  
External  
Eyes  
Flowers  
Food  
Fruits  
Grasp  
Grow  
Habitat  
Leaves  
Organism  
Plants  
Predator  
Produce  
Protect  
Respond  
Roots  
Skin  
Stems  
Survival  
Temperature  
Touch  
Water |

### Core Ideas for Knowing Science:

**L1:** Organisms are organized on a cellular basis and have a finite life span.

**L2:** Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.

### Core Ideas for Using Science:

**U1:** Scientists explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised.

### Science & Engineering Practices:

- Ask Questions and Define Problems
- Construct Explanations and Design Solutions
- Obtain, Evaluate and Communicate Information

### Crosscutting Concepts:

- Patterns
- Structure & Function

### Standards

**2018 AZ Science Standards**

#### Focus:

Students develop an understanding that the world is comprised of living and non-living things. They investigate the relationship between structure and function in living things; plants and animals use specialized parts to help them meet their needs and survive.

#### Learning Progressions:

All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and perform other essential functions.
### Life Science Standards

**K.L1U1.6:** Obtain, evaluate and communicate information about how organisms use different body parts for survival.

**K.L2U1.7:** Observe, ask questions and explain how specialized structures found on a variety of plants and animals (including) humans help them sense and respond to their environment.

**K.L2U1.8:** Observe, ask questions and explain the differences between the characteristics of living and non-living things.

To place, and seek, find, and take in **food, water, and air.** Plants also have different parts (**roots, stems, leaves, flowers, fruits**) that help them survive, grow, and produce more plants. Animals have **body parts** that capture and convey different kinds of information needed for **growth and survival** – for example **eyes** for light, **ears** for sounds, and **skin** for temperature or **touch.** Animals **respond** to these **inputs** with behaviors that help them survive (e.g., find food, run from a **predator**).

### Social Justice Standards

**Identity 1** – I know and like who I am and can talk about my family and myself and name some of my group identities. (ID.K-2.1)

**Diversity 9** – I know everyone has feelings, and I want to get along with people who are similar to and different from me. (DI.K-2.9)

**Justice 12** – I know when people are treated unfairly. (JU.K-2.12)

**Action 16** – I care about those who are treated unfairly. (AC.K-2.16)

**Teaching Tolerance Anti-Bias Framework:** [https://www.tolerance.org/frameworks](https://www.tolerance.org/frameworks)

### Adopted Texts and Materials


**Textbook:**

- “Liquid Explorations” materials unit/kit. [Note: Only use the portions of the kit that complement the Life Science learning standards]
- Teacher’s manual for “Liquid Explorations” in unit/kit
- FOSS website: [www.fossweb.com](http://www.fossweb.com)

**Multicultural Books aligned with Unifying Concept:**

- If the World Were a Village: A Book about the World’s People Smith, David
- Our World of Water. Hollyer, Beatrice. 363.6 Hol
- What Can you Do with a Paleta? By Carmen Tafolla

**Scholastic Leveled Readers**

**Multicultural Inclusive Strategies**

**Science Kit Supplemental Resources**

**Instructional and Assessment Guides**

**Additional Instructional Resources**

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### Culturally Responsive Practices *(TUSD SPARKS, SPARKS Strategies)*

### Anchor Phenomena:
Look at a picture of a plant and an animal. Have students generate a list of questions about them.

### NGSS Phenomena How and why to use phenomena.

### Pre/Post Unit Assessment:
[http://intranet/science/Kit_Asmts.html](http://intranet/science/Kit_Asmts.html)

### Class Concept Map—pre and post with linking phrases to indicate relationships of concepts and processes.

### Formative/Performance Assessment - examples:
- Quick writes and drawings in notebooks (e.g. draw and label different parts of organisms that help them survive – a bird’s beak, a plant’s roots, a fish’s gills)
- Use scientific vocabulary to describe how organisms use different body parts for survival.
- Compare and contrast different specialized structures found on a variety of plants and animals (including) humans.
- Design & Conduct an experiment and report the results, (e.g. how lettuce grows in natural light versus in the dark.)

### Educational Materials Center Resources, including books, kits, panels, and videos:

### Additional Resources:
- Living Things Lessons
- Plant Survival
- Animal Structures and Functions
- Crosscutting Concept Resources
- National Academies Press
- Science and Engineering Practices
- Understanding & Applying Science & Engineering Practices
- Phenomena for NGSS
- Project Phenomena
- EMC Bibliography of additional resources
## Reading Focus: Informational
Writing Focus: Informative/Explanatory

## Unifying Concept: Physical Science
Resource Kit: Fabrics / Supplemental Materials

<table>
<thead>
<tr>
<th>Enduring Understanding:</th>
<th>Essential Questions:</th>
<th>Academic Vocabulary:</th>
</tr>
</thead>
</table>
| Senses allow us to see, hear, feel, taste, and smell. | • How are our senses used every day?  
• How do our senses help us understand the world around us?  
• What would happen if one of your senses was taken away?  
• How do tools and technology help to extend our senses? | Air  
Compare  
Design  
Detect  
Devices  
Discuss  
Drawing  
Ears  
Eyes  
Light  
Physical model  
Problem  
Reflect  
Senses  
Solution  
Sound  
Sketch  
Source  
Strength  
Test  
Touch  
Vibration  
Weakness |
| Senses help us learn and communicate with others. | | |
| Tools and technology can be used to extend senses. | | |

### Core Ideas for Knowing Science:
- **P2:** Objects can affect other objects at a distance.

### Core Ideas for Using Science:
- **U1:** Scientists explain phenomena using evidence obtained from observations and/or scientific investigations. Evidence may lead to developing models and/or theories to make sense of phenomena. A new evidence is discovered, models and theories can be revised.
- **U2:** The knowledge produced by science is used in engineering and technologies to solve problems and/or create products.

### Science & Engineering Practices:
- Ask Questions and Define Problems
- Develop and Use Models
- Plan and Carry Out Investigations
- Construct Explanations and Design Solutions
- Obtain, Evaluate and Communicate Information

### Crosscutting Concepts:
- **Patterns**
- **Cause & Effect**
- **Structure & Function**

### Standards
- **2018 AZ Science Standards**
### Focus:
Students explore how their senses can detect light, sound, and vibration and how technology can be used to extend their senses.

### Physical Science Standards

**K.P2U1.1:** Investigate how senses can detect light, sound, and vibrations even when they come from far away; use the collected evidence to **develop and support an explanation**.

**K.P2U2.2:** **Design and evaluate** a tool that helps people extend their senses.

### Learning Progressions:

People use their **senses** to learn about the world around them. Their **eyes** detect light, their **ears** detect sound, and they can feel vibrations by **touch**. People also use a variety of devices to communicate (send and receive information) over long distances.

Objects can have an effect on other objects even when they are not in contact with them. For instance, **light** affects the objects it reaches, including our eyes. Objects that are seen either give out or **reflect** light that human eyes can detect. **Sound** comes from thins that vibrate and can be detected at a distance from the sources because the air or other material around is made to **vibrate**. Sounds are heard when the vibrations in the air enter our ears.

Designs can be conveyed through **sketches**, **drawings**, or **physical models**. Because there is always more than one possible solution to a problem, it is useful to **compare** designs, **test** them, and **discuss** their **strengths** and **weaknesses**.

### Social Justice Standards

**Identity 1** – I know and like who I am and can talk about my family and myself and name some of my group identities. (ID.K-2.1)

**Diversity 9** – I know everyone has feelings, and I want to get along with people who are similar to and different from me. (DI.K-2.9)

**Justice 12** – I know when people are treated unfairly. (JU.K-2.12)

**Action 16** – I care about those who are treated unfairly. (AC.K-2.16)

### Teaching Tolerance Anti-Bias Framework:
https://www.tolerance.org/frameworks

### Adopted Texts and Materials


**Textbook:**
- “Fabric” materials unit/kit. [Note: Only use the portions of the kit that complement the Physical Science learning standards]
- Teacher’s manual for “Fabric” in unit/kit.
- FOSS website: [www.fossweb.com](http://www.fossweb.com)

**Multicultural Books aligned with Unifying Concept:**
- My Five Senses by Aliki Brandenberg
- Dumpling Soup by Jama Kim Rattigan
- My Food, Your Food by Lisa Bullard
- Look, Listen, Taste, Touch, and Smell: Learning About Your Five Senses, by Pamela Hill Nettlet
- Same, Same but Different by Jenny Sue Kostecki-Shaw
### Culturally Responsive Practices (TUSD SPARKS, SPARKS Strategies)

**Anchor Phenomena:**
Look at a picture of a plant and an animal. Have students generate a list of questions about them.

**NGSS Phenomena** How and why to use phenomena.

**Pre/Post Unit Assessment:**
[http://intranet/science/Kit_Asmts.html](http://intranet/science/Kit_Asmts.html)

**Class Concept Map** - Create a Class Concept Map-pre and post with linking phrases to indicate relationships of five senses.

**Formative/Performance Assessment** - examples:
- Quick writes and drawings in notebooks (e.g. draw and label how different food tastes – salty, sweet, sour, etc.)
- Use scientific vocabulary to describe properties of fabric.
- Compare and contrast the sound of different items when rattled in a coffee can, or the feeling of different items in a black box.
- Conduct an experiment and report the results, (e.g. how an empty cup or a blown-up balloon can help to amplify sound.)
- Conduct an experiment and report results (e.g. can you tell the difference between a piece of peeled potato / apple if you hold your nose?)

### Additional Instructional Resources


**Additional Resources:**
- [10 Activities for Teaching about the 5 Senses](#)
- [Experiments with Your 5 Senses](#)
- [Five Senses Lesson Ideas](#)
- [Crosscutting Concept Resources](#)
- [National Academies Press](#)
- [Science and Engineering Practices](#)
- [Understanding & Applying Science & Engineering Practices](#)
- [Phenomena for NGSS](#)
- [Project Phenomena](#)
<table>
<thead>
<tr>
<th>Reading Focus: Literature, Informational Writing Focus: Narrative, Opinion, Informative/Explanatory</th>
<th>Unifying Concept: Earth &amp; Space Science Air and Weather</th>
<th>Suggested Duration: 11 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enduring Understandings:</strong></td>
<td><strong>Essential Questions:</strong></td>
<td><strong>Academic Vocabulary:</strong></td>
</tr>
<tr>
<td>Weather patterns allow us to make predictions. Weather is determined by the conditions and movement of air. The Earth, Sun, moon, and stars move in predictable patterns.</td>
<td>• How does air interact with objects? How can we determine wind speed and direction? • How can air do work? • Why are there seasons? • How can we collect weather information and use it in our lives? • What does temperature tell us about weather conditions? • How can we organize weather data to look for change? • What do clouds tell us about the weather? When we observe the night sky what do we see?</td>
<td>Air, Cycle, Direction, Moon, Patterns, Temperature, Sun, Planet, Predict, Water vapor, Weather</td>
</tr>
</tbody>
</table>

**Core Ideas for Knowing Science:**

E1: The composition of the Earth and its atmosphere and the natural and human processes occurring within them shape the Earth’s surface and its climate.

E2: The Earth and our solar system are a very small part of one of many galaxies within the Universe.

**Core Ideas for Using Science:**

U1: Scientist explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised.

**Science & Engineering Practices:**

- Ask Questions and Define Problems
- Construct Explanations and Design Solutions
- Obtain, Evaluate and Communicate Information

**Crosscutting Concepts:**

- Patterns
- Cause & Effect
- Structure & Function
- Stability & Change

**Standards**

**2018 AZ Science Standards**

**Focus:** Students develop an understanding of patterns to understand changes in local weather, seasonal cycles, and daylight.

**Earth & Space Science Standards**

**Learning Progressions**

There is air all around the Earth’s surface, but there is less and less further away from the surface (higher in the sky). **Weather** is determined by the conditions and movement of the air. The **temperature**, **pressure**, and **direction**.
K.E1U1.3: Observe, record, and ask questions about temperature, precipitation, and other weather data to identify patterns or changes in local weather.

K.E1U1.4: Observe, describe, ask questions, and predict seasonal weather patterns; and how those patterns impact plants and animals (including humans).

K.E2U1.5: Observe and ask questions about patterns of the motion of the sun, moon, and stars in the sky.

Speed of movement and the amount of water vapor in the air combine to create the weather. Measuring these properties over time enables patterns to be found that can be used to predict the weather a short time ahead.

Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. At night one can see the light coming from many stars with the naked eye, but telescopes make it possible to see many more and to observe them and the moon and planets in greater detail.

### Social Justice Standards

| Identity 1 | I know and like who I am and can talk about my family and myself and name some of my group identities. (ID.K-2.1) |
| Diversity 9 | I know everyone has feelings, and I want to get along with people who are similar to and different from me. (DI.K-2.9) |
| Justice 12 | I know when people are treated unfairly. (JU.K-2.12) |
| Action 16 | I care about those who are treated unfairly. (AC.K-2.16) |

### Teaching Tolerance Anti-Bias Framework

[https://www.tolerance.org/frameworks](https://www.tolerance.org/frameworks)

### Adopted Texts and Materials


**Textbook:**
- “Air & Weather” materials unit/kit
- Teacher’s manual for “Air & Weather”
- 8 copies of Air & Weather (Science Stories)
- FOSS website: [www.fossweb.com](http://www.fossweb.com)

**Multicultural Books aligned with Unifying Concept:**
- A Storm Called Katrina (2011) (IL:K-3 RL:3)
- Rain School (2010) (PreK-3)
- A Place Where Hurricanes Happen (2010) (IL:K-3 RL:2.7)
- Monsoon Afternoon (2008) (K-3)
- Four Feet, Two Sandals (2007) (Grades 1-5)
- Bintou’s Braids (2001) (IL:K-3 RL:2.1)
- Coyote and the Sky. Garcia, Emmett. 398.2Gar
- The Flute Player. Lacapa, Michael. 398.2 La
- Big Moon Tortilla by Joy Cowley

### Additional Instructional Resources

<table>
<thead>
<tr>
<th>Scholastic Leveled Readers</th>
<th>Multicultural Inclusive Strategies</th>
<th>Science Kit Supplemental Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="sun.png" alt="Sun" /></td>
<td><img src="rain.png" alt="Rain" /></td>
<td><img src="snow.png" alt="Snow" /></td>
</tr>
</tbody>
</table>

### Instructional and Assessment Guides

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<table>
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<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Anchor Phenomena:</strong> Look at a picture of a sunny day and a rainy day. Have students come up with questions regarding what they see.</td>
<td><strong>Additional Resources:</strong></td>
</tr>
<tr>
<td><strong>NGSS Phenomena</strong> How and why to use phenomena.</td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">Related Lessons</a></td>
</tr>
<tr>
<td><strong>Pre/Post Unit Assessment:</strong> <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum</a></td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">UCAR Center for Science Education</a></td>
</tr>
<tr>
<td><strong>Concept Map</strong> - pre and post with linking phrases to indicate relationships of concepts and processes</td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">ZME Science</a></td>
</tr>
<tr>
<td><strong>Formative/Performance Assessment</strong> - examples:</td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">Weather 101: A tutorial on cloud types</a></td>
</tr>
<tr>
<td>• Quick writes and drawings in notebooks (e.g. different types of clouds)</td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">Elementary Globe</a></td>
</tr>
<tr>
<td>• Use scientific vocabulary and explain what happens when air provides energy for objects.</td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">Phenomena for NGSS</a></td>
</tr>
<tr>
<td>• Compare and contrast clouds and the weather they indicate.</td>
<td>- <a href="http://curriculum.tusd1.org/Subjects/Science/Science-Kindergarten-Curriculum">Project Phenomena</a></td>
</tr>
<tr>
<td>• Write about the cycles of the moon.</td>
<td></td>
</tr>
</tbody>
</table>