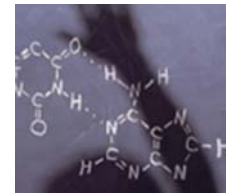


# Grade 2 Science

## STAAR Field Guide



## STAAR

The State of Texas of Assessment of Academic Readiness (STAAR) is based on the Texas Essential Knowledge and Skills (TEKS). Most of the state standards, if they are eligible for assessment in a multiple choice/short answer format, will be assessed on STAAR.

STAAR is designed as a vertical system. Just as the TEKS are structured in a vertically aligned manner, so is STAAR. Learning from one grade level is aligned with learning at the next grade level. Some skills are developed over the course of a student's educational career from kindergarten through high school, while other skills and learning may begin at a particular grade level and serve as the foundation for later learning. STAAR is an assessment of academic readiness. In other words, we can sum up the variation between the current assessment program (TAKS) and STAAR by reframing the questions we are asking.

**TAKS:** TAKS was designed to help teachers answer this question:

- Did students learn what they were supposed to learn in the current year's grade?

**STAAR:** STAAR is designed to ensure that teachers answer these questions:

- Did students learn what they were supposed to learn in the current year's grade?
- Are students ready for the next grade?
- And are they also ready for the grade after that?

So what's the big deal about that shift? Fundamentally, it requires that teachers relook at curriculum and instruction in a very different way than they have under previous assessment systems (TABS, TEAMS, TAAS, TAKS). Not only are teachers required to have a deep understanding of the content of the grade level they are teaching, but they must also be firmly grounded in how the content of that current grade level prepares students for subsequent grade levels. Overemphasis on grade level attainment ONLY may create a context where teachers in subsequent grade levels have to reteach foundational skills to accommodate for the gap created by the lack of appropriate emphasis earlier. It may require students "unlearn" previous ways of conceptualizing content and essentially start all over.

### STAAR: focus, clarity, depth

[The TEKS] are designed to prepare students to succeed in college, in careers and to compete globally. However, consistent with a growing national consensus regarding the need to provide a more clearly articulated K–16 education program that focuses on fewer skills and addresses those skills in a deeper manner (TEA).

STAAR is designed around three concepts: focus, clarity, and depth:

**Focus:** STAAR will focus on grade level standards that are critical for that grade level and the ones to follow.

**Clarity:** STAAR will assess the eligible TEKS at a level of specificity that allow students to demonstrate mastery.

**Depth:** STAAR will assess the eligible TEKS at a higher cognitive level and in novel contexts.

**STAAR: the assessed curriculum – readiness, supporting, and process standards**

A key concept that underpins the design of STAAR is that all standards (TEKS) do not play the same role in student learning. Simply stated, some standards (TEKS) have greater priority than others – they are so vital to the current grade level or content area that they must be learned to a level of mastery to ensure readiness (success) in the next grade levels. Other standards are important in helping to support learning, to maintain a previously learned standard, or to prepare students for a more complex standard taught at a later grade.

By assessing the TEKS that are most critical to the content area in a more rigorous ways, STAAR will better measure the academic performance of students as they progress from elementary to middle to high school. Based on educator committee recommendations, for each grade level or course, TEA has identified a set of readiness standards - the TEKS which help students develop deep and enduring understanding of the concepts in each content area. The remaining knowledge and skills are considered supporting standards and will be assessed less frequently, but still play a very important role in learning.

**Readiness standards** have the following characteristics:

- They are essential for success in the current grade or course.
- They are important for preparedness for the next grade or course.
- They support college and career readiness.
- They necessitate in-depth instruction.
- They address broad and deep ideas.

**Supporting standards** have the following characteristics:

- Although introduced in the current grade or course, they may be emphasized in a subsequent year.
- Although reinforced in the current grade or course, they may be emphasized in a previous year.
- They play a role in preparing students for the next grade or course but not a central role.
- They address more narrowly defined ideas.

**STAAR assesses the eligible TEKS at the level at which the TEKS were written.**

STAAR is a more rigorous assessment than TAKS (and TAAS, TEAMS, TABS before that). The level of rigor is connected with the cognitive level identified in the TEKS themselves. Simply stated, STAAR will measure the eligible TEKS at the level at which they are written.

The rigor of items will be increased by

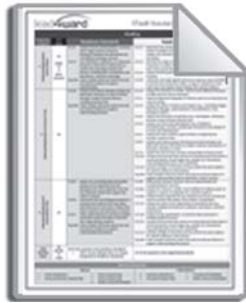
- assessing content and skills at a greater depth and higher level of cognitive complexity
- assessing more than one student expectation in a test item

The rigor of the tests will be increased by

- assessing fewer, yet more focused student expectations and assessing them multiple times and in more complex ways
- including a greater number of rigorous items on the test, thereby increasing the overall test difficulty

## About the STAAR Field Guide

The STAAR Field Guide for Teachers is designed as a tool to help teachers prepare for instruction. The tools and resources in this guide are designed to supplement local curriculum documents by helping teachers understand how the design and components of STAAR are connected to the scope and sequence of instruction. In order to help students attain even higher levels of learning as assessed on STAAR, teachers need to plan for increasing levels of rigor. This guide contains the following components:



**STAAR Grade Level Snapshot** – one page overview of the standards assessed on STAAR, how those standards are classified (readiness, supporting, or process), the reporting categories around which those standards are clustered, and the number of items that will be on the test from each reporting category and from each type of standard.



**STAAR Readiness Standards: A Vertical Look** – a vertical look at the readiness standards in grade bands to show the progression of the assessment between grade levels



**STAAR Readiness and Supporting Standards Analysis Sheets**– overviews of the nature of each readiness and supporting standard assessed on STAAR, designed to be used in planning to build teacher content knowledge and ensure that current grade level instruction reinforces previous learning and prepares students for future grade levels.



**STAAR-Curriculum Planning Worksheet** – a tool to organize the pages in this guide to be used in planning and professional development

### Steps to Success

1. Download the TEA Documents to add to your STAAR Teacher Field Guide
  - STAAR Blueprint
  - Assessed Curriculum Documents
  - STAAR Test Design
  - STAAR Reference Materials
2. Review the STAAR Snapshot for your course/grade level and content area
  - Note the readiness standards
  - With your team, explore why those TEKS are classified as readiness standards – which criteria do they meet
  - Review the supporting standards and note any that may have played a larger role on TAKS
3. Review the STAAR Readiness Standards: A Vertical Look
  - Discuss how the readiness standards connect between grade levels
  - Explore the specific differences between the aligned readiness standards at each grade level
4. Review the components of the STAAR Readiness and Supporting Standards Analysis Sheets
  - Use the samples on pages 6 and 7 to explore the analysis sheets
  - Add additional information based on the discussion on the team
5. Create STAAR-Curriculum Planning Packets for each unit or grading period
  - Collect either the Scope and Sequence document (if it includes the TEKS standards for each unit of instruction) OR Unit Plan documents (where the TEKS standards are bundled together into units of instruction)
  - The STAAR Field Guide is arranged by standard type (readiness or supporting) in numeric order of the standards. You may need to photocopy certain pages/standards if they are repeated throughout multiple units.
  - Use the scope and sequence or unit plan documents to identify the TEKS taught in each unit/grading period
  - Compile the STAAR Readiness and Supporting Standards Analysis Sheets that correspond to the TEKS each unit/grading period
  - After the pages/standards are sorted into their appropriate unit, create a method of organizing the documents (binder, folder, file, etc).
6. Plan for instruction
  - Collect the curriculum documents used for planning
  - Use the STAAR- Curriculum Planning Worksheet as you plan each unit. The worksheet provides guiding questions and reflection opportunities to aide you in maximizing the material in the STAAR Field Guide.
  - Determine where the team needs additional learning
  - Evaluate instructional materials
  - Review the plan for appropriate levels of rigor

## How to read STAAR Readiness Standards analysis pages

Student Expectation

Texas Essential Knowledge and Skills Statement

Standard and Indication of "Readiness" or "Supporting"

Grade and Subject

(5.3) Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, and divides to solve meaningful problems. The student is expected to

**5.3A Readiness**  
Grade 5 Math

**(A) use addition and subtraction to solve problems involving whole numbers and decimals;**

**Content Builder**  
What do the students need to know?  
Content  

- Addition
  - Whole numbers
  - Decimals
- Subtraction
  - Whole numbers
  - Decimals

 Connections  
 In previous grades students added and subtracted decimals to the hundredths place using concrete objects and pictorial models. This supports the learning in grade 5 as students are using addition and subtraction to solve problems involving decimals.  
 To what degree will this learning impact learning two years down the road?  
 This learning will impact future learning as students will continue to be asked to use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals.

**Academic Vocabulary**  

- Add
- Subtract
- Decimal

**Rigor Implications**  
Verb  

- Add
- Subtract
- Solve

 Level of Bloom's Taxonomy  

- Applying

 Instructional Implications  
 To appropriately adhere to the standard, students should be provided the opportunity to solve a variety of problems using addition and subtraction involving both whole numbers and decimals.

**Distractor Factor**  
 Teachers should look for students who may be struggling with the addition when the whole is broken up into a decimal, or when the decimals add up to more than a whole.

**Level of Difficulty**

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**Content Builder-** The basics of the content within the standard are extracted in a bulleted list. Connections to prior learning/other standards are explained. Future implications of mastery of this standard are described to assist in understanding the impact of this learning in the future.

**Rigor Implications-** Uses the verb(s) from the Student Expectation to indicate the cognitive complexity of the standard and which level of Bloom's Taxonomy should be addressed during instruction, Instructional implications are also highlighted.

**Distractor Factor -** Alerts teachers to areas where students traditionally struggle, have misconceptions, or may need reinforcement.

**Academic Vocabulary-** Vocabulary words are extracted directly from the standard and/or associated with the instruction of the content within the standard.

**Level of Difficulty-** Standards are labeled either Challenging or Moderate. This determination is made by the campus using previous year data.

## How to read STAAR Supporting Standards analysis pages

Student Expectation

Texas Essential Knowledge and Skills Statement

Standard and Indication of  
"Readiness" or "Supporting"

Grade and Subject

**5.1B Supporting**  
Grade 5 Math

(5.1) Number, operation, and quantitative reasoning. The student uses place value to represent whole numbers and decimals. The student is expected to

**(B) use place value to read, write, compare, and order decimals through the thousandths place.**

**Supporting the Readiness Standards**

What Readiness Standard(s) or concepts from the Readiness Standards does it support?  
5.3A use addition and subtraction to solve problems involving whole numbers and decimals.

How does it support the Readiness Standard(s)?  
This standard supports 5.3A by providing students continued practice reading, writing, comparing, and ordering decimals. This will support students as they solve addition and subtraction problems involving decimals.

*May be adjusted according to local curriculum.*

**Academic Vocabulary**

- Compare
- Order
- Decimal
- Tenths
- Hundredths
- Thousandths

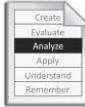
**Rigor Implications**

Verb

- Write
- Compare
- Order

Level of Bloom's Taxonomy

- Analyzing



**Instructional Implications**  
To appropriately adhere to the standard, students should be provided the opportunity to practice reading numbers aloud using place value, writing numbers that have been dictated using place value, and comparing and ordering decimals based on their the value.

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**Supporting the Readiness Standards** - Most supporting standards support a readiness standard in the current grade level. This section discusses the relationships of the standards that are often taught together.

**Rigor Implications**- Uses the verb(s) from the Student Expectation to indicate the cognitive complexity of the standard and which level of Bloom's Taxonomy should be addressed during instruction, Instructional implications are also highlighted.

**Academic Vocabulary**- Words are extracted directly from the standard and/or associated with the instruction of the content within the standard.



## Curriculum - STAAR Planning Worksheet

Course/Grade Level \_\_\_\_\_

Readiness Standards

Content Area \_\_\_\_\_

Grading Period/Unit \_\_\_\_\_

Supporting Standards

Action Steps	Guiding Questions & Notes
Read each analysis page.	<p>What stands out?</p> <p>How many of the standards are a “Challenging” level of difficulty?</p> <p>How many of the standards are a high level of rigor (above apply on Bloom’s Taxonomy)?</p>
<i>Content Builder</i> (Readiness Standards only)	<p>What other connections could you add to this section? Write them on your analysis pages!</p> <p>This content important for students’ future learning. How will you assess retention?</p>
<i>Supporting the Readiness Standards</i> (Supporting Standards only)	<p>How can you use this information as you plan lessons?</p> <p>Do the supporting standards match with the readiness standards in your unit bundle? If not, arrange them according to your curriculum. Address the questions again “Which Readiness Standards does it support? How does it support the Readiness Standard(s)?”</p>



Curriculum - STAAR Planning Worksheet



Action Steps	Guiding Questions & Notes
Vocabulary	<p>What strategies will you use to ensure mastery of the vocabulary for each standard in this unit?</p> <p>What is your plan if students do not master the vocabulary?</p>
Use the <i>Distractor Factor</i>	<p>How can you address the information in the Distractor Factor section?</p> <p>From your teaching experience, is there anything you would add to this? Write it on your analysis pages!</p>
<b>Reflection</b>	<p>How have you taught this content in the past?</p> <p>How will you teach it differently this year?</p> <p>How will you utilize the readiness and supporting standards for formative and summative assessment?</p>

Reporting Category	Readiness Standards	Supporting Standards
1 Matter and Energy	<p>2.5.A classify matter by physical properties, including shape, relative mass, relative temperature, texture, flexibility, and whether material is a solid or liquid*</p> <p>2.5.D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties</p>	<p>2.5.B compare changes in materials caused by heating and cooling* demonstrate that things can be done to materials to change their physical properties such as cutting, folding, sanding, and melting</p>
2 Force, Motion, and Energy	<p>2.6.A investigate the effects on an object by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears different in dimmer light or how heat melts butter**</p>	<p>2.6.B observe and identify how magnets are used in everyday life*</p> <p>2.6.C trace the changes in the position of an object over time such as a cup rolling on the floor and a car rolling down a ramp</p> <p>2.6.D compare patterns of movement of objects such as sliding, rolling, and spinning</p>
3 Earth and Space	<p>2.7.A observe and describe rocks by size, texture, and color</p> <p>2.8.A measure, record, and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage, in order to identify patterns in the data*</p>	<p>2.7.B identify and compare the properties of natural sources of freshwater and saltwater</p> <p>2.7.C distinguish between natural and manmade resources</p> <p>2.8.B identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation</p> <p>2.8.C explore the processes in the water cycle, including evaporation, condensation, and precipitation, as connected to weather conditions*</p> <p>2.8.D observe, describe, and record patterns of objects in the sky, including the appearance of the Moon**</p>
4 Organisms and Environments	<p>2.9.A identify the basic needs of plants and animals</p> <p>2.9.C compare and give examples of the ways living organisms depend on each other and on their environments such as food chains within a garden, park, beach, lake, and wooded area*</p>	<p>2.9.B identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things*</p> <p>2.10.A observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs such as fins help fish move and balance in the water**</p> <p>2.10.B observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant*</p> <p>2.10.C investigate and record some of the unique stages that insects undergo during their life cycle*</p>

**Process Standards (Scientific Investigation and Reasoning Skills)**

2.1.A	identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately
2.1.B	describe the importance of safe practices
2.1.C	identify and demonstrate how to use, conserve, and dispose of natural resources and materials such as conserving water and reuse or recycling of paper, plastic, and metal
2.2.A	ask questions about organisms, objects, and events during observations and investigations
2.2.B	plan and conduct descriptive investigations such as how organisms grow
2.2.C	collect data from observations using simple equipment such as hand lenses, primary balances, thermometers, and non-standard measurement tools
2.2.D	record and organize data using pictures, numbers, and words
2.2.E	communicate observations and justify explanations using student-generated data from simple descriptive investigations
2.2.F	compare results of investigations with what students and scientists know about the world
2.3.A	identify and explain a problem in his/her own words and propose a task and solution for the problem such as lack of water in a habitat
2.3.B	make predictions based on observable patterns
2.3.C	identify what a scientist is and explore what different scientists do
2.3.C	collect, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums
2.4.A	
2.4.B	measure and compare organisms and objects using non-standard units that approximate metric units

\* = Aligned with STAAR Assessed Curriculum at Grade 5

**NOTE:** *The classification of standards on this TEKS Snapshot represents the reviewed and synthesized input of a sample of Texas Science teachers. This TEKS Snapshot DOES NOT represent a publication of the Texas Education Agency. District curriculum materials may reflect other classifications.*

**(2.5) Matter and energy.** The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to:

**(A) Classify matter by physical properties, including shape, relative mass and relative temperature, texture, flexibility, and whether material is a solid or liquid.**



### Content Builder

**What do the students need to know?**

#### Content

- Relative mass (more mass than, less mass than)
- Relative temperature (cooler, warmer, more heat)
- Texture
- Flexibility
- Solid or liquid
- Shape

#### Connections:

Students will need to know that matter can be classified and sorted using physical properties. This standard builds from kindergarten TEKS K.5A and first grade TEKS 1.5A.

#### To what degree will this learning impact learning two years down the road?

This readiness standard directly supports third, fourth, and fifth grade readiness standards. (3.5A, 4.5A, 5.5A). In third grade, students will measure, test, and record physical properties of mass, including temperature, mass, magnetism, and the ability to sink or float in water. In fourth grade, students also compare and contrast physical properties with the addition of size, volume, physical state, and buoyancy.



### Academic Vocabulary

- Classify
- Physical properties
- Texture
- Flexibility
- Relative mass



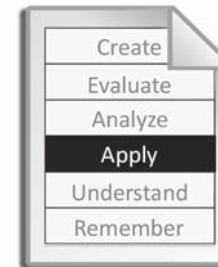
### Rigor Implications

#### Verb

- Classify

#### Level of Bloom's Taxonomy

- Applying



#### Instructional Implications

Provide students with hands-on investigations where they can classify matter by physical properties that include: color, shape, relative mass, relative temperature, texture, flexibility, and state of matter, including solid or liquid.



### Distractor Factor

Students may have the misconception that mass and weight are the same thing.



### Level of Difficulty (based on local data)

- Moderate  Challenging

## Grade 2 Science

**(2.5) Matter and energy.** The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to:

**(D) Combine materials that when put together can do things that they cannot do by themselves, such as building a tower or a bridge and justify the selection of those materials based on their physical properties.**



### Content Builder

**What do the students need to know?**

#### Content

- Create a system and justify components based on physical properties
- Understand that when combining materials, items can do things that they could not have done by themselves.

#### Connections:

This concept is introduced at this grade level. It is important for students to understand the materials that combine to make towers and bridges and their physical properties.

#### To what degree will this learning impact learning two years down the road?

This readiness standard indirectly supports readiness standards in third and fourth grade that pertain to mixtures and solutions. (3.5D, 4.5C, 5.5C)



### Academic Vocabulary

- Physical properties



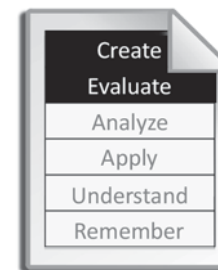
### Rigor Implications

#### Verb

- Identify, Combine, Justify

#### Level of Bloom's Taxonomy

- Evaluating
- Creating



#### Instructional Implications

The most important concept in this standard is that there are parts that, when combined, work together to carry out a particular job or action.



### Distractor Factor

To avoid creating a misconception, show that the parts should only be used to create a bridge/tower, but include in classroom conversation that some parts/materials may serve other functions. For example, the supports for a bridge may also be used in other construction projects.



### Level of Difficulty (based on local data)

- Moderate  Challenging

**(2.6) Force, motion, and energy.** The student knows that forces cause change and energy exists in many forms. The student is expected to:

**(A) Investigate the effects on an object by increasing or decreasing amounts of light, heat, and sound energy such as how the color of an object appears differently in dimmer light or how heat melts butter.**



### Content Builder

**What do the students need to know?**

#### Content

- Light
- Energy
- Heat
- Sound

#### Connections:

Students will need to know the effects on an object when light, heat or sound are increased or decreased. The student knows that forces cause change, and energy exists in many forms.

Prior knowledge might include explorations with light, heat, and sound energy, in students' daily lives. (K.6A, 1.6A)

#### To what degree will this learning impact learning two years down the road?

This readiness standard continues to build the important conceptual understanding of energy. Students will continue to explore and differentiate the difference sources of energy in third, fourth, and fifth grade. (3.6A, 4.6A, 5.6A)



### Academic Vocabulary

- Light
- Energy
- Heat
- Sound
- Pitch
- Vibration
- Loudness



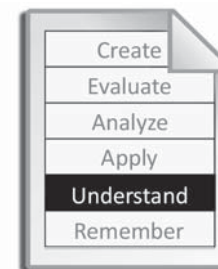
### Rigor Implications

#### Verb

- Investigate

#### Level of Bloom's Taxonomy

- Understanding



#### Instructional Implications

In order to adhere to this standard, provide students with hands-on investigations which involve light, heat, and sound.



### Distractor Factor

Students may think the only source of light is artificial. Students will need to know that light sources can be natural (the Sun) and artificial. At this stage in a child's cognitive ability, the scientific explanation detailing why an object's color appears different in dimmer light is more complex than they will understand. Students need to have the understanding that a change in the amount of light energy produces a visible change.



### Level of Difficulty (based on local data)

- Moderate  Challenging

**(2.7) Earth and space.** The student knows that the natural world includes earth materials. The student is expected to:

**(A) Observe and describe rocks by size, texture and color.**



### Content Builder

**What do the students need to know?**

**Content**

- Size of rocks (boulders, gravel, sand)
- Color of rocks
- Texture of rocks

**Connections:**

This standard builds on previous standards K.7A and 1.7A. Students will build on this knowledge in second grade by observing and describing the physical properties of rocks.

**To what degree will this learning impact learning two years down the road?**

In the intermediate grades, students will build on this concept by learning about specific landforms, as well as the effects of changes to the Earth's surface through weathering, erosion, and deposition.



### Academic Vocabulary

- Rock
- Color
- Texture



### Rigor Implications

**Verb**

- Observe, Describe

**Level of Bloom's Taxonomy**

- Remembering
- Understanding



**Instructional Implications**

Providing students with investigations where they can observe different kinds of rocks will help them to be able to describe their physical characteristics.



### Distractor Factor

Students may think that rocks are living organisms. Students may think that rocks have little value.



### Level of Difficulty (based on local data)

- Moderate       Challenging

**(2.8) Earth and space.** The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

**(A) Measure, record, and graph weather information, including temperature, wind conditions, precipitation, and cloud coverage in order to identify patterns in the data.**



### Content Builder

**What do the students need to know?**

#### Content

- Changes in weather
- Temperature
- Wind conditions
- Precipitation
- Cloud coverage
- Patterns in weather

#### Connections:

Students have been learning about weather through observing, describing, and recording their findings in kindergarten and first grade (TEKS K.8A, 1.8A) In second grade, students strengthen these understandings by identifying local weather trends, and creating and interpreting data tables.

#### To what degree will this learning impact learning two years down the road?

This standard aligns with readiness standards in third through fifth grades (3.8A, 4.8A, 5.8A) in which students will continue to observe, measure, and record changes in weather. In fifth grade, students will determine the distinction between weather and climate.



### Academic Vocabulary

- Wind conditions
- Cloud coverage
- Precipitation
- Temperature



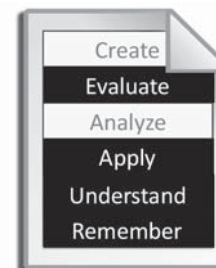
### Rigor Implications

#### Verb

- Measure, Record, Graph

#### Level of Bloom's Taxonomy

- Remembering
- Understanding
- Applying
- Evaluating



#### Instructional Implications

This standard focuses on cloud cover (clear, partly cloudy, foggy), not on the different types of clouds. Students will need to graph weather data and be able to describe patterns in this data.



### Distractor Factor

Students may think that the local patterns of weather are the same all over the world.

When observing weather patterns, students may think that objects in the sky change shape rather than appearance.



### Level of Difficulty (based on local data)

- Moderate       Challenging

**(2.9) Organisms and environments.** The student knows that living organisms have basic needs that must be met for them to survive within their environment. The student is expected to:

**(A) Identify the basic needs of plants and animals.**



### Content Builder

#### What do the students need to know?

##### Content

- Plants' basic needs – water, space, light, nutrients
- Animals' basic needs – water, food, shelter, air

##### Connections:

The foundational knowledge for this standard was introduced in kindergarten supporting TEKS K.9B. Students will need to know that living things have basic needs that must be met in order to survive. The concept builds in second grade with students identifying the basic needs of plants and animals.

#### To what degree will this learning impact learning two years down the road?

This standard aligns with readiness standard 3.9A, which is a tested standard on STAAR. Students will need to have a basic understanding of the needs of living organisms so that they can connect this to a larger idea of how environments support populations and communities within an ecosystem. The concept is then built upon in fourth grade with standard 4.9A.



### Academic Vocabulary

- Basic need
- Plant
- Animal



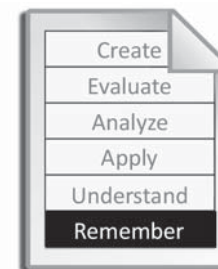
### Rigor Implications

#### Verb

- Identify

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

It is important that students have a strong understanding of the differences between living and nonliving things before this standard is introduced. When teaching this standard, students will need to experience activities that explore the basic needs of both plants and animals. Demonstrations and simple investigations provide students with hands-on experiences.



### Distractor Factor

Beginning early in education, children are taught that in order to grow, plants need sunlight, water, and soil. One of the most common misconceptions is that plants obtain their nutrients, or "food," from the soil instead of by manufacturing organic compounds through the process of photosynthesis.



### Level of Difficulty (based on local data)

- Moderate  Challenging



**(2.9) Organisms and environments.** The student knows that living organisms have basic needs that must be met for them to survive within their environment. The student is expected to:

**(C) Compare and give examples of the ways living organisms depend on each other and on their environments such as food chains within a garden, park, beach, lake, and wooded area.**



### Content Builder

**What do the students need to know?**

#### Content

- Interdependence among organisms
- Dependence on environment
- Food chains – in gardens, parks, beaches, lakes, and wooded areas

#### Connections:

Interdependence was introduced in first grade. Students will now compare and give examples of ways living organisms depend on each other and their environments.

#### To what degree will this learning impact learning two years down the road?

This readiness standard helps provide background knowledge for learning in third and fourth grade with standards 3.9B and 4.9B. Students will build on this understanding to connect to larger concepts such as the complex relationships between flow of energy in food chains and the effect changes in a food chain have on the ecosystem.



### Academic Vocabulary

- Interdependence
- Food chain
- Environment



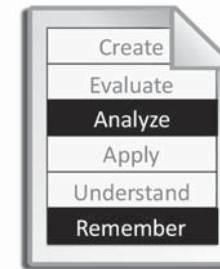
### Rigor Implications

#### Verb

- Compare, Give

#### Level of Bloom's Taxonomy

- Remembering
- Analyzing



#### Instructional Implications

To adhere to this standard, students will need to have learning activities where they can explore the food chains in gardens, parks, beaches, lakes, and wooded areas.



### Distractor Factor

Students might think that food chains start with the smallest animal. Remind students that food chains start with energy from the sun, then producers.



### Level of Difficulty (based on local data)

- Moderate       Challenging

**(2.5) Matter and energy.** The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to:

**(B) Compare changes in materials caused by heating and cooling.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This standard directly supports 3.5C, which is a tested standard on STAAR. It builds from Readiness Standard 3.5A where students measure, test, and record the physical changes to matter.

**How does it support the Readiness Standard(s)?**

The concept was introduced in kindergarten and first grades with the supporting standards K.5B and 1.5B. This background knowledge supports readiness standard 3.5A

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Melting
- Freezing
- Evaporating
- Cooling
- Heating



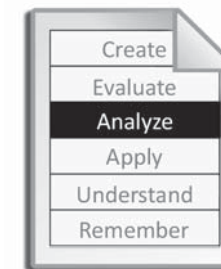
### Rigor Implications

**Verb**

- Compare

**Level of Bloom's Taxonomy**

- Analyzing



**Instructional Implications**

The big concept in this standard is that matter and materials change when heat is added or removed. Provide opportunities for students to observe and participate in simple descriptive investigations.

**(2.5) Matter and energy.** The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to:

**(C) Demonstrate that things can be done to materials to change their physical properties such as cutting, folding, sanding, and melting.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

The standard supports 3.5C, which is a tested STAAR standard.

**How does it support the Readiness Standard(s)?**

This is a new concept introduced with this standard. It builds on the concept that physical properties can change.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Physical property
- Change
- Matter



### Rigor Implications

**Verb**

- Demonstrate

**Level of Bloom's Taxonomy**

- Understanding



**Instructional Implications**

Provide hands on investigations for students as specified in the standards.

**(2.6) Force, motion, and energy.** The student knows that forces cause change and energy exists in many forms. The student is expected to:

**(B) Observe and identify how magnets are used in everyday life.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This standard helps support the conceptual understanding of force, motion, and energy. 2.6B does not directly support a readiness standard.

**How does it support the Readiness Standard(s)?**

This concept is built upon in supporting standard 3.6A.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Magnet
- Push
- Pull
- Force
- Motion



### Rigor Implications

**Verb**

- Observe, Identify

**Level of Bloom's Taxonomy**

- Remembering



### Instructional Implications

Be sure to provide examples of magnets in everyday life, including: refrigerator magnets, magnetic clips for posting messages, jewelry with magnetic clasps, magnetic name badges, and large junk-yard electromagnets. Share with students the understanding that magnetism is a unique force because it can work across a distance. You can push or pull without touching an object.

**(2.6) Force, motion, and energy.** The student knows that forces cause change and energy exists in many forms. The student is expected to:

**(C) Trace the changes in the position of an object over time such as a cup rolling on the floor and a car rolling down a ramp.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

This standard directly supports 3.6C, which is a tested supporting standard on STAAR. Students will observe forces such as magnetism and gravity acting on objects with TEKS 3.6C.

#### How does it support the Readiness Standard(s)?

2.6C lays the foundational knowledge of how objects move when a force is applied.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Push pull
- Position
- Direction



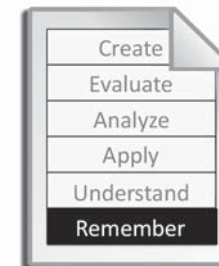
### Rigor Implications

#### Verb

- Trace

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

The activities suggested in this standard can be abstract. Try attaching a piece of yarn to a toy car before rolling it down a ramp. This can help students see that the car traveled mostly in a straight line down the ramp.

**(2.6) Force, motion, and energy.** The student knows that forces cause change and energy exists in many forms. The student is expected to:

**(D) Compare patterns of movement of objects such as sliding, rolling, and spinning.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

This supporting standard aligns with 3.6B, a supporting standard that is tested on STAAR.

#### How does it support the Readiness Standard(s)?

Previous standards K.6D and 1.6D align to this supporting standard. In kindergarten and first grade, students were introduced to the ways objects move. Students observed and described the changes in movement. In second grade, students will compare patterns of movement.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Movement
- Pattern
- Sliding
- Rolling
- Spinning
- Force
- Push
- Pull



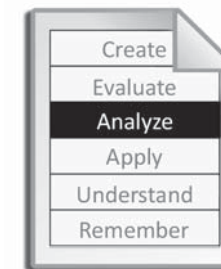
### Rigor Implications

#### Verb

- Compare

#### Level of Bloom's Taxonomy

- Analyzing



#### Instructional Implications

Students will need to know that objects move in different ways. They will also need to be able to compare patterns of movement and how sliding, rolling, and spinning results in movement.

**(2.7) Earth and space.** The student knows that the natural world includes earth materials. The student is expected to:

**(B) Identify and compare the properties of natural sources of freshwater and saltwater.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

This standard does not support a readiness standard.

**How does it support the Readiness Standard(s)?**

K.7B and 1.7B have laid the foundational knowledge for this standard. However, this supporting standard will not be built upon in the intermediate grades.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Properties
- Salt water
- Fresh water
- Natural sources



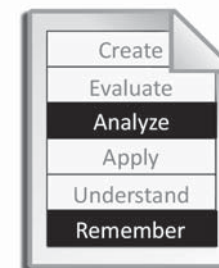
### Rigor Implications

**Verb**

- Identify, Compare

**Level of Bloom's Taxonomy**

- Remembering
- Analyzing



**Instructional Implications**

Instruction should include comparing the properties of oceans, rivers, lakes, streams, spring water, rain, snow, glaciers, icebergs, and ice caps, etc., as “natural sources” of fresh and saltwater.

**(2.7) Earth and space.** The student knows that the natural world includes earth materials. The student is expected to:

**(C) Distinguish between natural and manmade resources.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

The standard directly supports 3.7C. It also vertically aligns to Readiness Standard 4.7C and Readiness standard 5.7C, which are readiness standards tested on STAAR.

#### How does it support the Readiness Standard(s)?

Supporting standards K.7C and 1.7C have provided foundational knowledge for this standard. This standard supports readiness standard 4.7C.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Manmade
- Natural



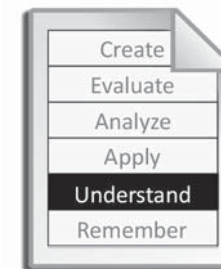
### Rigor Implications

#### Verb

- Distinguish

#### Level of Bloom's Taxonomy

- Understanding



#### Instructional Implications

Students will need opportunities to explore the differences between natural and man-made resources.



**(2.8) Earth and space.** The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

**(B) Identify the importance of weather and seasonal information to make choices in clothing, activities, and transportation.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

This supporting standard is a stand-alone in that, in the intermediate grades, it is not discussed. However, the larger conceptual understanding that there are patterns in the natural world that affect living organisms will persist through all future science courses.

#### How does it support the Readiness Standard(s)?

Standards K.8B and 1.8C provided the foundational knowledge of seasons. With this standard, students will learn how the importance of weather and seasonal information will help them make choices in clothing, activities, and transportation.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Weather
- Season



### Rigor Implications

#### Verb

- Identify

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

Instructional activities should focus on the local weather. Generic symbols such as a snowflake to represent seasonal information for winter, may not be appropriate if the local area rarely sees snowfall.

**(2.8) Earth and space.** The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

**(C) Explore the processes in the water cycle, including evaporation, condensation, and precipitation as connected to weather conditions.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

The supporting standard is aligned with STAAR assessed curriculum at grade five.

#### How does it support the Readiness Standard(s)?

This concept was not introduced in kindergarten or first grade. The new concept does not directly support a readiness standard, but builds important background knowledge for fourth grade.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Water cycle
- Evaporation
- Condensation
- Precipitation



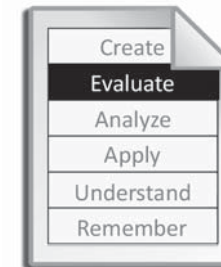
### Rigor Implications

#### Verb

- Explore

#### Level of Bloom's Taxonomy

- Evaluating



#### Instructional Implications

Instructional activities should include: how the water cycle impacts local weather, the forms of precipitation, and how the water cycle is made of processes that continuously repeat and provide fresh water for the Earth.

**(2.8) Earth and space.** The student knows that there are recognizable patterns in the natural world and among objects in the sky. The student is expected to:

**(D) Observe, describe, and record patterns of objects in the sky, including the appearance of the Moon.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

This standard directly supports readiness standard 3.8D, where students will learn about the planets in Earth's solar system.

#### How does it support the Readiness Standard(s)?

Standards K.8C and 1.8B introduced the concept that there are objects in the day and night sky. In second grade, the emphasis is the patterns in the sky, including the Moon. Students should have a firm understanding of the Moon phases and movement of objects in sky, including changes and patterns. This directly supports Readiness Standard 3.8D.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Moon
- Stars



### Rigor Implications

#### Verb

- Observe, Describe, Record

#### Level of Bloom's Taxonomy

- Remembering
- Understanding



#### Instructional Implications

Students will need to be introduced to the idea that the moon will look different over a period of time. Students will not need to know every phase, but that the changes in the appearance of the Moon form a pattern. Activities should also involve looking at patterns in the stars, or constellations.

**(2.9) Organisms and environments.** The student knows that living organisms have basic needs that must be met for them to survive within their environment. The student is expected to:

**(B) Identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

This standard aligns with the STAAR assessed curriculum at 5th grade, specifically, standard 5.9C.

#### How does it support the Readiness Standard(s)?

Supporting standards 3.9C and 4.9B provide additional conceptual knowledge on how the factors in the environment affect living things.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Environment
- Temperature
- Precipitation
- Migration
- Hibernation
- Dormancy



### Rigor Implications

#### Verb

- Identify

#### Level of Bloom's Taxonomy

- Remembering



#### Instructional Implications

Instruction will need to focus on: how environmental factors affect growth and behavior, and interactions between living and non-living parts of an ecosystem; how dormancy is a period in an organism's life cycle when growth, development, and physical activity is temporarily stopped; and how, in hibernation, metabolic activities decrease but do not stop.

**(2.10) Organisms and environments.** The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments. The student is expected to:

**(A) Observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs, such as how fins help fish move and balance in the water.**



### Supporting the Readiness Standards

#### What Readiness Standard(s) or concepts from the Readiness Standards does it support?

This supporting standard aligns with Readiness Standards in the intermediate grades, including 3.10A, 4.10A, and 5.10A. It is tested at the fifth grade level with 5.10A.

#### How does it support the Readiness Standard(s)?

Previous supporting standard K.10A and readiness standard 1.10A have provided students with background knowledge for this standard. 2.10A directly supports Readiness Standards 3.10A, 4.10A, and 5.10A.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Fins
- Wings
- Tails
- Heads
- Feet
- Legs
- Feathers
- Fur
- Hair
- Scales



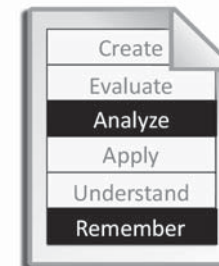
### Rigor Implications

#### Verb

- Observe, Record, Compare

#### Level of Bloom's Taxonomy

- Remembering
- Analyzing



#### Instructional Implications

Instruction will need to center around the understanding that behaviors help organisms meet their basic needs.

**(2.10) Organisms and environments.** The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments. The student is expected to:

**(B) Observe, record, and compare how the physical characteristics of plants help them meet their basic needs, such as how stems carry water throughout the plant.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

1.10B indirectly supports Readiness standards 3.10A and 4.10A.

**How does it support the Readiness Standard(s)?**

K.10B and 1.10B helped with foundational knowledge for this standard. This standard supports the readiness standard by providing background knowledge of the inner workings of plant parts and their interaction with soil.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Plant
- Leaves
- Roots
- Stem
- Flowers
- Fruit
- Seeds



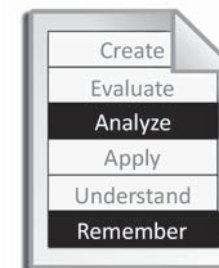
### Rigor Implications

**Verb**

- Observe, Record, Compare

**Level of Bloom's Taxonomy**

- Remembering
- Analyzing



**Instructional Implications**

To adhere to this standard, provide students with live plants so that they can examine the different parts. Focus on comparing how the physical characteristics of plant parts provide for their basic needs.

**(2.10) Organisms and environments.** The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments. The student is expected to:

**(C) Investigate and record some of the unique stages that insects undergo during their life cycle.**



### Supporting the Readiness Standards

**What Readiness Standard(s) or concepts from the Readiness Standards does it support?**

2.10C lays the foundation for supporting standard 3.10C, which is part of the assessed curriculum tested on the 5th grade STAAR. This standard also provides support for Readiness Standards 3.10A and 4.10A.

**How does it support the Readiness Standard(s)?**

Supporting standards K.10D and 1.10D align with this standard. This standard helps support the big idea of pattern and change over time. These ideas help support Readiness Standards which are linked to adaptations and survival 3.10A, 4.10A.

*May be adjusted according to local curriculum.*



### Academic Vocabulary

- Insect
- Egg
- Pupa
- Larva
- Adult



### Rigor Implications

**Verb**

- Investigate, Record

**Level of Bloom's Taxonomy**

- Remembering



**Instructional Implications**

Instruction should focus on the unique stages of insect life cycles, including complete (egg, larva, pupa, adult) and incomplete (egg, nymph, adult) metamorphosis. Students should know examples of insects that undergo incomplete metamorphosis (grasshopper, cricket, dragonflies) as well as examples of insects that undergo complete metamorphosis (beetles, bees, ants, butterflies).