Kindergarten Topic Model - Bundle 2

Living Things

This is the second bundle of the Topic Model. Each bundle has connections to the other bundles in the course, as shown in the Course Flowchart

Bundle 2 Question: This bundle is assembled to address the question of "What is the relationship between the needs of different plants and animals and the places they live?"

Summary

The bundle organizes performance expectations around *the relationship between the needs of different plants and animals and the places they live*. Instruction developed from this bundle should always maintain the three-dimensional nature of the standards, but recognize that instruction is not limited to the practices and concepts directly linked with any of the bundle performance expectations.

Connections between bundle DCIs

The concept that all animals need food and plants need water and light (LS1.C as in K-LS1-1) connects to the idea that living things need water, air, and resources from the land, and they live in places that have the things they need (ESS3.A as in K-ESS3-1). These ideas also connect to the concept that plants and animals (including humans) can change the environment to meet their needs (K-ESS2-2). The concept that humans use natural resources for everything they do (ESS3.A as in K-ESS3-1) connects to the idea that the things people do to live comfortably can affect the world around them, but they can make choices that reduce their impacts on the land, water, air, and other living things (ESS3.C as in K-ESS2-2 and K-ESS3-3)

Weather—which is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time (ESS2.D as in K-ESS2-1)—connects to the idea that living things need water (ESS3.A as in K-ESS3-1) and the idea that plants need light (LS1.C as in K-LS1-1). Also, the concept of the needs of living things connects to weather through making observation to notice and describe patterns as: observations can be used to describe the patterns of what plants and animals need (K-LS1-1) and observations and measurements of weather conditions can be used to describe and record the weather and to notice patterns over time (ESS2.D as in K-ESS2-1). The concepts of weather and patterns of weather (ESS2.D as in K-ESS2-1) also connect to the idea that some kinds of severe weather are more likely than others in a given region (ESS3.B as in K-ESS3-2).

The idea that a situation that people want to change or create can be approached as a problem to be solved through engineering (ETS1.A, K-2-ETS1-1) could connect to several concepts such as plants need water and light to live and grow (LS1.C as in K-LS1-1), humans use natural resources for everything they do (ESS3.A as in K-ESS3-1), or that people can make choices that reduce their impacts on the land, water, air, and other living things (ESS3.C as in K-ESS3-3). These connections could be made through tasks such as designing a solution to the problem of plants in a garden not getting enough water or sunlight or identifying ways to reduce their class' impact on the local water system. Alternatively, students could be challenged with a different design task involving creating products out of natural resources that are abundant in their area. In both tasks, students need an opportunity to reflect on the situation to be changed and that it can be approached as a problem to be solved through engineering.

Bundle Science and Engineering Practices
Instruction leading to this bundle of PEs will help students build toward proficiency in elements of the practices of asking questions and defining problems (K-ESS3-2 and K-2-ETS1-1); developing and using models (K-ESS3-1); analyzing and interpreting data (K-LS1-1 and K-ESS2-1); engaging in argument from evidence (K-ESS2-2); and obtaining, evaluating, and communicating Information (K-ESS3-2 and K-ESS3-3). Many other practice elements can be used in instruction.

Bundle Crosscutting Concepts
Instruction leading to this bundle of PEs will help students build toward proficiency in elements of the concepts of Cause and Effect (K-ESS3-2 and K-ESS3-3); and Patterns (K-LS1-1 and K-ESS2-1); Systems and System Models (K-ESS2-2 and K-ESS3-1). Many other crosscutting concepts elements can be used in instruction.

All instruction should be three-dimensional.

Performance Expectations K-ESS2-1 and K-2-ETS1-1 are partially assessable	K-LS1-1. **Use observations to describe patterns of what plants and animals (including humans) need to survive.** **[Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]** K-ESS2-2. **Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.** **[Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]** K-ESS2-1**. Use and share observations of local weather conditions to describe patterns over time.** **[Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.]** **[*Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.*]** K-ESS3-1**. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.** **[Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]** K-ESS3-2. **Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.*** **[Clarification Statement: Emphasis is on local forms of severe weather.]** K-ESS3-3**. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*** **[Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]** K-2-ETS1-1. **Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.**

Example Phenomena	Animals dig for food and water. Beavers make dams. Forests don't have a lot of grass.
Additional Practices Building to the PEs	**Asking Questions and Defining Problems** ● Ask questions based on observations to find more information about the natural and/or designed world. Students could *ask questions based on observations to find more information about [**how] plants and animals can change their environment.*** K-LS1-1, K-ESS2-2, K-ESS3-3 and K-ESS2-1 **Developing and Using Models** ● Compare models to identify common features and differences. Students could *compare models **[about how] living things live in places that have the things they need** to identify common features and differences.* K-ESS3-1 **Planning and Carrying Out Investigations** ● Evaluate different ways of observing and/or measuring a phenomenon to determine which way can answer a question. Students could *evaluate different ways of observing **[local weather] conditions** to determine which way can answer a question.* K-ESS2-1 **Analyzing and Interpreting Data** ● Compare predictions (based on prior experiences) to what occurred (observable events). Students could *compare predictions (based on prior experiences) **[of local weather] conditions** to what occurred (observable events).* ● Use and share pictures, drawings, and/or writings of observations. Students could *use and share pictures, drawings and/or writings of observations **[local weather] conditions, [including] severe weather.*** K-ESS2-1 and K-ESS3-2 **Using Mathematical and Computational Thinking** ● Use counting and numbers to identify and describe patterns in the natural and designed world(s). Students could *use counting and use numbers to identify patterns **[of local weather] over time***. K-ESS2-1 **Constructing Explanations and Designing Solutions** ● Generate and/or compare multiple solutions to a problem. Students could *generate and/or compare multiple solutions to a problem* related to ***plants need [for] water and light to live and grow.*** K-LS1-1

Additional Practices Building to the PEs (Continued)	**Engaging in Argument from Evidence** ● Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence. Students could *make a claim about the effectiveness of a solution* ***[intended to] reduce their impact on the land, water, air, [or] other living things*** *which is supported by relevant evidence*. K-ESS3-3 **Obtaining, Evaluating, and Communicating Information** ● Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas. Students could *communicate information with others in oral and/or written forms using models that provide detail about scientific ideas of [how]* ***living things live in places that have the things they need.*** K-ESS3-1
Additional Crosscutting Concepts Building to the PEs	**Cause and Effect** ● Simple tests can be designed to gather evidence to support or refute student ideas about causes. Students could describe how designing a simple test about ***[how] plants and animals can change their environment*** could allow them *to gather evidence to support or refute ideas about causes*. K-ESS2-2 **Scale, Proportion, and Quantity** ● Relative scales allow objects and events to be compared and described (e.g., bigger and smaller; hotter and colder; faster and slower). Students could describe how *relative scales allow them to compare and describe* ***[local weather] conditions and to notice patterns over time.*** K-ESS2-1 **Stability and Change** ● Things may change slowly or rapidly. Students could describe that *things like* ***[local weather] conditions, [including] severe weather,*** *may change slowly or rapidly.* K-ESS2-1 and K-ESS3-2
Additional Connections to Nature of Science	**Scientific Knowledge Is Based on Empirical Evidence** ● Scientists look for patterns and order when making observations about the world Students can explain how *scientists make observations [about and]* ***measure [weather] conditions to describe and record the weather and to*** *look for patterns*. K-ESS2-1 **Science is a Way of Knowing** ● Science knowledge helps us know about the world. Students can describe how *the science knowledge* they are learning like ***[how] plants and animals can change their environment*** *helps them know about the world.* K-LS1-1, K-ESS2-2, K-ESS3-3 and K-ESS2-1

K-LS1-1 From Molecules to Organisms: Structures and Processes

Students who demonstrate understanding can:

K-LS1-1. **Use observations to describe patterns of what plants and animals (including humans) need to survive.** [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Analyzing and Interpreting Data

Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world.

Disciplinary Core Ideas

LS1.C: Organization for Matter and Energy Flow in Organisms

- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

Crosscutting Concepts

Patterns

- Patterns in the natural and human designed world can be observed and used as evidence.

Observable features of the student performance by the end of the grade:			
1	Organizing data		
	a	With guidance, students organize the given data from observations (firsthand or from media) using graphical displays (e.g., pictures, charts), including:	
		i.	Different types of animals (including humans).
		ii.	Data about the foods different animals eat.
		iii.	Data about animals drinking water.
		iv.	Data about plants' need for water (e.g., observations of the effects on plants in a classroom or school when they are not watered, observations of natural areas that are very dry).
		v.	Data about plants' need for light (e.g., observations of the effect on plants in a classroom when they are kept in the dark for a long time; observations about the presence or absence of plants in very dark places, such as under rocks or porches).
2	Identifying relationships		
	a	Students identify patterns in the organized data, including that:	
		i.	All animals eat food.
			1. Some animals eat plants.
			2. Some animals eat other animals.
			3. Some animals eat both plants and animals.
			4. No animals do not eat food.
		ii.	All animals drink water.
		iii.	Plants cannot live or grow if there is no water.
		iv.	Plants cannot live or grow if there is no light.
3	Interpreting data		
	a	Students describe* that the patterns they identified in the data provide evidence that:	
		i.	Plants need light and water to live and grow.
		ii.	Animals need food and water to live and grow.
		iii.	Animals get their food from plants, other animals, or both.

K-ESS2-1 Earth's Systems

Students who demonstrate understanding can:

K-ESS2-1. **Use and share observations of local weather conditions to describe patterns over time.** [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [*Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.*]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Analyzing and Interpreting Data
Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

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Connections to Nature of Science

Science Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world.

Disciplinary Core Ideas

ESS2.D: Weather and Climate

- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

Crosscutting Concepts

Patterns

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Observable features of the student performance by the end of the grade:		
1	Organizing data	
	a	With guidance, students organize data from given observations (firsthand or from media) about local weather conditions using graphical displays (e.g., pictures, charts). The weather condition data include:
		i. The number of sunny, cloudy, rainy, windy, cool, or warm days.
		ii. The relative temperature at various times of the day (e.g., cooler in the morning, warmer during the day, cooler at night).
2	Identifying relationships	
	a	Students identify and describe* patterns in the organized data, including:
		i. The relative number of days of different types of weather conditions in a month.
		ii. The change in the relative temperature over the course of a day.
3	Interpreting data	
	a	Students describe* and share that:
		i. Certain months have more days of some kinds of weather than do other months (e.g., some months have more hot days, some have more rainy days).
		ii. The differences in relative temperature over the course of a day (e.g., between early morning and the afternoon, between one day and another) are directly related to the time of day.

K-ESS2-2 Earth's Systems

Students who demonstrate understanding can:

K-ESS2-2. **Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.** [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Engaging in Argument from Evidence
Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s).

- Construct an argument with evidence to support a claim.

Disciplinary Core Ideas

ESS2.E: Biogeology

- Plants and animals can change their environment.

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. *(secondary)*

Crosscutting Concepts

Systems and System Models

- Systems in the natural and designed world have parts that work together.

Observable features of the student performance by the end of the grade:			
1	Supported claims		
	a	Students make a claim to be supported about a phenomenon. In their claim, students include the idea that plants and animals (including humans) can change the environment to meet their needs.	
2	Identifying scientific evidence		
	a	Students identify and describe* the given evidence to support the claim, including:	
		i.	Examples of plants changing their environments (e.g., plant roots lifting sidewalks).
		ii.	Examples of animals (including humans) changing their environments (e.g., ants building an ant hill, humans clearing land to build houses, birds building a nest, squirrels digging holes to hide food).
		iii.	Examples of plant and animal needs (e.g., shelter, food, room to grow).
3	Evaluating and critiquing evidence		
	a	Students describe* how the examples do or do not support the claim.	
4	Reasoning and synthesis		
	a	Students support the claim and present an argument by logically connecting various needs of plants and animals to evidence about how plants/animals change their environments to meet their needs. Students include:	
		i.	Examples of how plants affect other parts of their systems by changing their environments to meet their needs (e.g., roots push soil aside as they grow to better absorb water).
		ii.	Examples of how animals affect other parts of their systems by changing their environments to meet their needs (e.g., ants, birds, rabbits, and humans use natural materials to build shelter; some animals store food for winter).

K-ESS3-1 Earth and Human Activity

Students who demonstrate understanding can:

K-ESS3-1. **Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.** [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, storyboard) that represent concrete events or design solutions. • Use a model to represent relationships in the natural world.	**ESS3.A: Natural Resources** • Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.	**Systems and System Models** • Systems in the natural and designed world have parts that work together.

Observable features of the student performance by the end of the grade:			
1	Components of the model		
	a	From the given model (e.g., representation, diagram, drawing, physical replica, diorama, dramatization, storyboard) of a phenomenon involving the needs of living things and their environments, students identify and describe* the components that are relevant to their representations, including:	
		i.	Different plants and animals (including humans).
		ii.	The places where the different plants and animals live.
		iii.	The things that plants and animals need (e.g., water, air, and land resources such as wood, soil, and rocks).
2	Relationships		
	a	Students use the given model to represent and describe* relationships between the components, including:	
		i.	The relationships between the different plants and animals and the materials they need to survive (e.g., fish need water to swim, deer need buds and leaves to eat, plants need water and sunlight to grow).
		ii.	The relationships between places where different plants and animals live and the resources those places provide.
		iii.	The relationships between specific plants and animals and where they live (e.g., fish live in water environments, deer live in forests where there are buds and leaves, rabbits live in fields and woods where there is grass to eat and space for burrows for homes, plants live in sunny and moist areas, humans get resources from nature [e.g., building materials from trees to help them live where they want to live]).
3	Connections		
	a	Students use the given model to represent and describe*, including:	
		i.	Students use the given model to describe* the pattern of how the needs of different plants and animals are met by the various places in which they live (e.g., plants need sunlight so they are found in places that have sunlight; fish swim in water so they live in lakes, rivers, ponds, and oceans; deer eat buds and leaves so they live in the forest).
		ii.	Students use the given model to describe* that plants and animals, the places in which they live, and the resources found in those places are each part of a system, and that these parts of systems work together and allow living things to meet their needs.

K-ESS3-2 Earth and Human Activity

Students who demonstrate understanding can:

K-ESS3-2. **Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.*** [Clarification Statement: Emphasis is on local forms of severe weather.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Asking Questions and Defining Problems

Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested.

- Ask questions based on observations to find more information about the designed world.

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.

Disciplinary Core Ideas

ESS3.B: Natural Hazards

- Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

ETS1.A: Defining and Delimiting an Engineering Problem

- Asking questions, making observations, and gathering information are helpful in thinking about problems. *(secondary)*

Crosscutting Concepts

Cause and Effect

- Events have causes that generate observable patterns.

Connections to Engineering,Technology, and Applications of Science

Interdependence of Science, Engineering, and Technology

- People encounter questions about the natural world every day.

Influence of Engineering, Technology, and Science on Society and the Natural World

- People depend on various technologies in their lives; human life would be very different without technology.

Observable features of the student performance by the end of the grade:			
1	Addressing phenomena of the natural world		
	a	Students formulate questions about local severe weather, the answers to which would clarify how weather forecasting can help people avoid the most serious impacts of severe weather events.	
2	Identifying the scientific nature of the question		
	a	Students' questions are based on their observations..	
3	Obtaining information		
	a	Students collect information (e.g., from questions, grade appropriate texts, media) about local severe weather warnings (e.g., tornado alerts, hurricane warnings, major thunderstorm warnings, winter storm warnings, severe drought alerts, heat wave alerts), including that:.	
		i.	There are patterns related to local severe weather that can be observed (e.g., certain types of severe weather happen more in certain places).
		ii.	Weather patterns (e.g., some events are more likely in certain regions) help scientists predict severe weather before it happens.
		iii.	Severe weather warnings are used to communicate predictions about severe weather.
		iv.	Weather forecasting can help people plan for, and respond to, specific types of local weather (e.g., responses: stay indoors during severe weather, go to cooling centers during heat waves; preparations: evacuate coastal areas before a hurricane, cover windows before storms).

K-ESS3-3 Earth and Human Activity

Students who demonstrate understanding can:

K-ESS3-3. **Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*** [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.

- Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas.

Disciplinary Core Ideas

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

ETS1.B: Developing Possible Solutions

- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.*(secondary)*

Crosscutting Concepts

Cause and Effect

- Events have causes that generate observable patterns.

Observable features of the student performance by the end of the grade:		
1	Communicating information	
	a	Students use prior experiences and observations to describe* information about:
		i. How people affect the land, water, air, and/or other living things in the local environment in positive and negative ways.
		ii. Solutions that reduce the negative effects of humans on the local environment.
	b	Students communicate information about solutions that reduce the negative effects of humans on the local environment, including:
		i. Examples of things that people do to live comfortably and how those things can cause changes to the land, water, air, and/or living things in the local environment.
		ii. Examples of choices that people can make to reduce negative impacts and the effect those choices have on the local environment.
	b	Students communicate the information about solutions with others in oral and/or written form (which include using models and/or drawings.

K-2-ETS1-1 Engineering Design

Students who demonstrate understanding can:

K-2-ETS1-1. **Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.**

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Asking Questions and Defining Problems
Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s).
- Define a simple problem that can be solved through the development of a new or improved object or tool.

Disciplinary Core Ideas

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering.
- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- Before beginning to design a solution, it is important to clearly understand the problem.

Crosscutting Concepts

Observable features of the student performance by the end of the grade:		
1	Addressing phenomena of the natural or designed world	
	a	Students ask questions and make observations to gather information about a situation that people want to change. Students' questions, observations, and information gathering are focused on:
		i. A given situation that people wish to change.
		ii. Why people want the situation to change.
		iii. The desired outcome of changing the situation.
2	Identifying the scientific nature of the question	
	a	Students' questions are based on observations and information gathered about scientific phenomena that are important to the situation.
3	Identifying the problem to be solved	
	a	Students use the information they have gathered, including the answers to their questions, observations they have made, and scientific information, to describe* the situation people want to change in terms of a simple problem that can be solved with the development of a new or improved object or tool.
4	Defining the features of the solution	
	a	With guidance, students describe* the desired features of the tool or object that would solve the problem, based on scientific information, materials available, and potential related benefits to people and other living things.