Science Assessment System Through Course Task

Cole's Chart

Grade Level:
K

Phenomena:
Needs of Organisms

Science & Engineering Practices:
Analyzing and Interpreting Evidence
Engaging in Argument from Evidence

Crosscutting Concepts:
Patterns

Designed and revised by Kentucky Department of Education staff
in collaboration with teachers from Kentucky schools and districts.

Preparing to implement Through Course Tasks in the Classroom

What is a TCT?

- TCTs are 3-dimensional tasks specifically designed to get evidence of student competency in two dimensions, Science and Engineering Processes (SEPs) and Crosscutting Concepts (CCC), untethered from Performance Expectations (PEs)/standards. Tasks are sense-making experiences.
- Tasks are to be used formatively. The goal is for both students and teachers to understand areas of strength and improvement for the SEP(s) and CCC assessed within the task.

How do I facilitate a Through Course Task (TCT)?

- TCT facilitation is a collaborative process in which teacher teams calibrate understanding of the expectations of the task and refine strategies to be used during task facilitation.

Before the task:

1. Complete the TCT as a learner – compare understanding of task through the lens of success criteria (identified in the task) in order to understand expectations.
   Success criteria include:
   - What is this task designed to get evidence of?
   - What is the task asking the students to do?
   - What might a student response look like?
2. Identify the phenomenon within the task. Consult resources to assure teacher teams have a deep understanding of associated science concepts.
3. Collaborate to generate, review and refine feedback questions during facilitation.
4. Identify potential "trouble spots" and plan for possible misconceptions.

During the task:

5. Collect defensible evidence of each student's competencies in 3-dimensional sense-making for the task.
6. Ask appropriate feedback questions to support student access and engagement with the task in order to elicit accurate evidence of student capacities.

After the task:

7. Reflect on the task as a collaborative team.
8. Review student work samples to identify areas of strength and areas of need.
9. Determine/plan next steps to move 3-D sense making forward through the strengthening of the use of SEPs and CCCs.

Using the materials included in this packet:

- **Task Annotation:**
  - The task annotation is a teacher guide for using the task in the classroom. Additionally, the annotation gives insight into the thinking of developers and the task overall.

    - Each task has science and engineering practices, disciplinary core ideas, and crosscutting concepts designated with both color and text style:
        - **Science and Engineering Practices**
        - *Disciplinary Core Ideas*
        - Crosscutting Concepts
- **Student Task:** The materials to be used by students to complete the TCT.

Cole's Chart Task Annotation

After **analyzing and interpreting data** *about what animals and plants need to survive*, **make a claim** about the *needs of a given plant or anima* using the patterns in the data **as evidence to support your claim.**

Overall intent

The intent of this task is to assess the student's use the patterns in the organized data as evidence to support a claim about the needs of animals and plants and provide reasoning as to why the evidence supports the claim.

Phenomenon within the task

Plants and animals have different needs in order to survive. It is important to note that this task generalizes the needs of most animals and plants. There is no connection to indirect need for sunlight or sunlight as the source of all energy (basis for food chains/webs). It is important that you don't perpetuate a misconception by telling students that all plants and animals have the same needs. There are exceptions. Also, it is important to emphasize that by "need food" we are talking about organisms that can't make their own food, so consider helping students discover that animals eat other organisms. Remember, students are analyzing the DATA IN THE CHART and the information in the chart is specific to the organisms provided.

Ideas for setting up the task with students

Prepare students by reading stories and/or watching videos about different animals and plants and what they need to survive. Consider having students choose an animal to research the kind of food it eats.

Kindergarten students, in the first nine weeks of school, will need experiences identifying various plants and animals. They also need to be familiar with the difference between living and non-living things.

Students will benefit from multiple opportunities that require stating claims and providing evidence to support their claims.

Provide students with multiple opportunities to gather and organize data as well as to identify patterns in the data. As students discuss patterns, provide opportunities to use patterns in the data as evidence to support their claim. Consider developing thinking stems to use as prompts to elicit student thinking.

Example: I think that_____. I think this because the pattern in the data shows_____. This is like _____.

Intent of the Task for Assessment

This task was designed to assess the student's ability to analyze data from a chart to describe patterns in the data. Since it was the first nine weeks of kindergarten, students needed support when analyzing the data to help them to 'see' the patterns.

Teacher note: When analyzing the information in Cole's chart (or any other chart), encourage students to look carefully at each of the columns to identify the type of living things in each column. For instance, when analyzing the food column, students should notice the living things are all animals. When analyzing the water column, students should notice that all of the living things are recorded. Consider questions that would prompt students to notice these rather than providing them.

There is an optional piece in the task should your student need another way to look closely at the data. A plank chart is provided that can be done whole/small group or with individual students. Students engage with the chart by marking what each living thing needs to survive based on the information in the original chart. Basically, students are organizing the data in a different way.

Having analyzed the data, students will use their understanding to make a claim about a different organisms (bear/sunflower). Kindergarten students are at the beginning of the grade band indicators for the Science and Engineering Practices and Crosscutting Concepts. Because of this, students are assessed on their ability to find a pattern and describe it. They are also asked to make claims and justify their claim based on patterns in the data.

List components of the task/resources used with the task.

- Scenario: Teacher reads the scenario to the students to set the stage for the task (**Teacher Resource)** and shares the corresponding chart (**Task Resource A**).
- **NEEDS of PLANTS and ANIMALS CHART (Task Resource)** – as mentioned in the scenario. This piece can be analyzed according to the needs of the students. Small group work is recommended so that you can capture individual student comments/thinking. Provide students with prompts (some suggested) to assist them in analyzing patterns in the data in the chart. This portion of the task is designed to help student synthesize the data in the chart. It is a necessary component because students will need to use the identified pattern as evidence later in the task.

- **<u>OPTIONAL</u> Student Resource**: This resource consists of a blank chart that requires the students to mark an X on the needs of specific living things (same living things as in the original chart). If students need more support in identifying the pattern in the data, consider using this resource as a means of representing the data differently. This resource could be used whole/small group/individually.
- **Cole's Chart Student Task:** This TCT requires students to state a claim about the needs of one of two living things that were not part of the original chart. Next, they are to support their claim by using patterns they observed in the data as evidence. A thinking stem is provided.

  *****This task was not designed to be done in 1 class period. You may carry this task over multiple class periods.*****

Success Criteria

Evidence of Learning Desired based on Progression from Appendices

Analyzing and Interpreting Data

- Record information.
- Use and share pictures, drawings and/or writing of observations .
- Use observations to describe patterns and/or relationship in the natural and designed world(s) in order to answer scientific questions and solve problems.

Engaging in Arguments from Evidence

- Construct an argument with evidence to support a claim.

Patterns

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

Success Criteria

- Students identify a pattern in the data and explain what the pattern means in relation to the phenomenon.
- Students then make a claim about the needs of a living thing based on the observed patterns in the given data.
- Students find a pattern about animals needing food and water to survive and/or plants needing water and sun to survive and use this as evident to support their prediction.

Possible Student Responses

- Look for/possible responses:
  - A pattern I notice is that all plants are in the sun group.

    - My pattern is the everything in the chart is in the water column.
    - I see only animals in the food boxes.
    - This tells me that animals need food and water to survive. Everything needs water to live.
- If the bear is circled, the Xs are marked in the food and water columns:
- I put the bear under the food and water because the information in the chart tells me that animals need food and water to live. When I looked at the plants and animals needs chart I found that all animals need these things and a bear is an animal.
- If the flower is circled, the Xs are marked in the water and sunlight column.
- The flower goes with water and sun because all plants need both so they won't die.
- Using Stem: I know the bear/sunflower needs water and sunlight to grow because when I looked at the "Plants and Animals Needs Chart" I found that all the plants need these things and a sunflower is a plant.

Extensions and/or other uses after the task is implemented

Once students have the knowledge that animals need food and water to survive, they will be ready to explore the idea of what types of foods different animals eat. Also, the assessment information elicited from this task will assist the teacher in planning for future instruction about analyzing data for patterns and using claims, evidence, and reasoning to construct an argument.

Through Course Task – Cole's Chart

Name:_____ Date_____

Cole saw these two pictures in his book as he continued to read. He wonders about their needs. Tell Cole what you know about the needs of one of the living things below.

Choose one of the living things below and circle it.

Use an X to mark the needs of the living thing you choose in the boxes below.

FOOD	WATER	SUNLIGHT

How did you know what the living thing needs to survive?

I know the bear/sunflower needs_____

to live because when I looked at the **Plants and Animals Needs chart** I

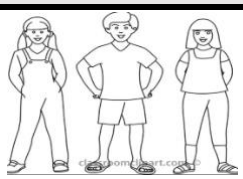
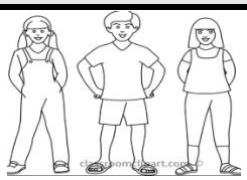
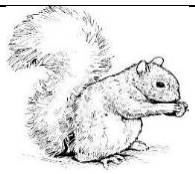
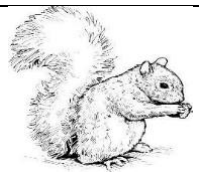
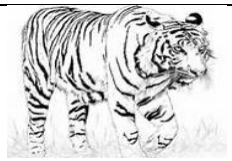
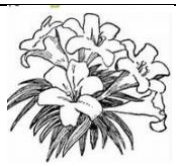
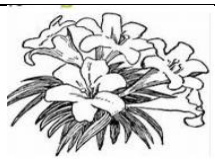
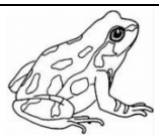
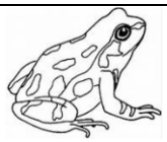
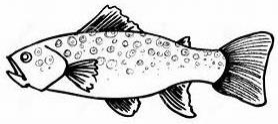
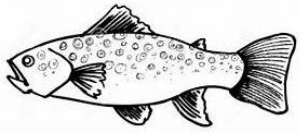
found _____

_____

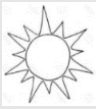
_____

_____

Name: _____ Date: _____

FOOD	WATER	SUNLIGHT
		
		
		
		
		
		
		
		

What do you notice about the organisms in each column? Write your answers in the boxes below.

FOOD 	WATER 	SUNLIGHT 

What do you notice that is alike? What do you notice that is different?

_____

_____

_____

What does the information you found tell you about the needs of plants and animals?

_____

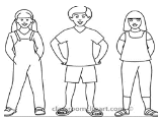
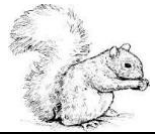
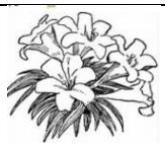
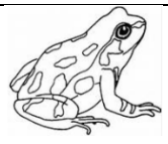
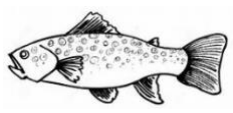
_____

_____

_____

Name: _____ Date: _____

Cole wants to organize the information differently to help him better understand the needs of plants and animals. Place an X in each box to show the needs of the organism.

	Food	Water	Sunlight
			
			
			
			
			
			
			
			

Teacher prompts:

- What do you notice about the needs of different organisms?
- Are some needs alike? Different?
- What pattern do you see?
- What do these patterns show you about the needs of plants or animals?

Cole's Chart Teacher Page

Read the following scenario aloud then show students the accompanying "Needs of Plants and Animals" chart referenced in the story.

Scenario:

Cole was reading a book about different animals and plants. On one of the pages in the book, Cole finds a chart titled ***Needs of Plants and Animals****. The pictures of animals and plants are organized into columns with the following headings: food, water, and sunlight. Cole is curious about the information in the chart based on its title. He would like you to help him better understand the information about the needs of living things. Let's begin by looking at the chart more closely.*

Teacher Note:

First, students will analyze the data to determine what living things need food to survive (food, water and/or sunlight). There is an optional student resource to use if students need further help with this part of the task.

After analyzing the data, identify a pattern in the data to use as evidence to support a claim about the needs of a specific plant or animal.