Science Assessment System Through Course Task

Outside Recess

Grade Levels:
Kindergarten

Phenomena:
Weather Changes Daily

Science & Engineering Practices:
Analyzing and Interpreting Data
Using Mathematics and Computational Thinking

Crosscutting Concepts:
Cause and Effect

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.

Outside Recess Task Annotation

After **observing the** relationship between *weather and type of recess* (inside/outside), students will use causal patterns to **count the number of days** to determine which of the weeks have more outside recess.

Phenomenon within the task

Weather conditions have an effect on human activities and behaviors. This task asks students to explore the relationship between weather and its effects on a daily activity at school, recess.

This task encourages students to think about how the weather impacts our daily lives. Kindergarten students have experienced situation when weather changes cause plans to change but they may not have had opportunities to makes sense of the causal relationship (the *why*). It is very common for young students to ask at the beginning of the day if they will go outside for recess. This is an important part of their day. What better topic to use than outside recess & daily weather when identifying a cause and effect relationship?

How the phenomenon relates to DCI, if applicable

ESS2.D Weather is the combination of sunlight, wind, snow or rain and temperature in region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

What information/data will students use within this task?

- Symbols - weather and/or markers (e.g. circle, x, checkmark, yes/no)
- Identify daily weather conditions (rainy and sunny)
- Terms to represent amounts (less, more, same)
- Counting skills
- How to compare numbers/amounts
- How to read/complete a table
- Difference between inside and outside

- The effects of rain on playgrounds (puddle, muddy, wet equipment, safe/unsafe)

Ideas for setting up the task with students

- Students need experiences recording daily weather on a calendar, recognizing the different weather patterns and the changes over time (day to day, week to week, and month to month).
- Encourage discussion about how weather effects their school playground. Does the playground have areas that dry out quickly, hold water (puddles)? What is the playground equipment like after it rains? Is it safe to play on?
- If helpful to the student, consider using a printout or weather calendar in which a student can manipulate pieces.
- This task is intended for student use at the **beginning of the school year**, however if used in the latter part of the year, consider having students complete the task independently.
- Students could be asked to find a pattern in the information they observe/record in the tables. It will be important to emphasize that the pattern is the result of a cause and effect relationship. Young students will not have solid foundational experiences that allow them to articulate their understanding of relationships and patterns so it will be essential that you prepare prompts that help them explain their growing understanding.

Intent of the Task for Assessment

The intent of this task is for students use the pattern identified in the cause and effect relationship observed from analysis the weather/recess data to complete two new sets of data that can be compared.

Students will:

- identify the type of weather associated with given symbols;
- make sense of the relationship between weather condition symbols and outside recess;
- used identified data patterns presented in tables related to type of weather during the week and the corresponding type of recess;
- Fill in/record missing data based on identified causal patterns between weather and recess type; and
- use mathematical thinking to determine which week had more days of outside recess.

List components of the task / resources used with the task

- Page 1 - Student scenario and Task Directions read aloud by the teacher (One copy for teacher)

- Page 2 & 3- Student response sheet (complete one on one or in small group)
- Page 4 & 5 – Task student response sheets (complete one on one)
- Page 6 - optional piece that is not addressed in success criteria (DCI focus)

Success Criteria:

Evidence of Learning Desired based on Progression from Appendices

Analyzing and Interpreting Data

- Use observations to describe patterns in the natural and designed world(s).

Using Mathematical and Computational Thinking

- Use counting and numbers to identify and describe patterns in the natural and designed world(s).

Cause and Effect

- Events have causes that generate observable patterns.

Success Criteria

Students will identify patterns in the data and use these patterns to determine if the weather (cause) will allow for recess (effect). From these patterns, students will count days for outside recess.

Possible Student Responses

Week 3 -Students add sun to Monday, Wednesday and Friday.

Week 4- Student add a check to indicate outdoor recess occurred on Thursday and Friday.

Student indicate they see a relationship between the weather and type of recess (note pattern)

Rainy = inside Sunny = outside

Students correctly record the days of outside recess for both weeks and state that Week 3 shows three days of outside recess while Week 4 only has two. Week 3 has more.

Other information teacher teams might find useful when preparing to use this task in the TCT process

At this level, students are beginning to think about cause and effect relationships by looking for patterns in the data. It is encouraged that teachers use phrases that have students begin to think about cause/effect relationships.

Extensions and/or other uses after the task is implemented

- Because this task is very straight forward (rain causes kids to play inside and sun causes them to have outside recess) it would be beneficial to challenge students to think about times when it was sunny but they did not have outside recess. What would cause the kids to have to stay inside? This is a realistic situation that can help student identify other effects of the weather. If the playground is not paved, could there be mud or slippery areas that make it unsafe to play outside? Are there standing puddles due to heavy rain in the morning that prevent them from going outside later that day in the while the sun shines? These types of questioning prompt deeper thinking as well as encourage deeper connections to the crosscutting concept of cause and effect. Consider facilitating an investigation that encourages students to make connections between weather and their school recess experiences.
- Optional student page – this page can be used to gather information of student understanding of the DCI and cause and effect. It is not part of the intent of the task but was created to support teachers by providing an additional tool.
- Have a "*Meteorologist of the Day"* to check, report on and record the daily weather. Then that students, or the class, could predict chances for outside recess.
- Record a week of weather in August, October, January and April to document change of weather conditions over time.
- Have students compare the weeks of recorded weather in order to have students compare changes in weather conditions during different seasons.
- Analyze the changes in weather according to seasons and how it affects our daily activities and behaviors.

Through Course Task – Outside Recess

Situation: (Teacher reads aloud)

"Mrs. Smith's Kindergarten class loves OUTSIDE RECESS! Every morning the class meteorologist checks the weather on the I-Pad. The students notice there are symbols for different weather conditions. Can you guess what these symbols mean?" (*Show symbols to students and elicit responses.)*

"The students in Mrs. Smith's class became interested in checking the weather to see if it will be safe to go outside. Let's help Mrs. Smith's class anaylyze the data."

Pages 2 & 3: to be completed in whole or small group

"Look at the weather on Week 1. What relationship do you notice between the weather conditions and outside recess? Why don't we go outside when it is rainy?" *(Elicit student thinking about the conditions of their playground and the safety factors associated with wet equipment, puddles, mud as well as weather element related to rain/storms.)*

"Look at the weather on Week 2. Using the pattern you noticed between outdoor recess and the weather in Week 1, put a check in the boxes of the days they will have outside recess in Week 2." *(Ask students to share their reasoning with elbow partners and/or the whole group.)*

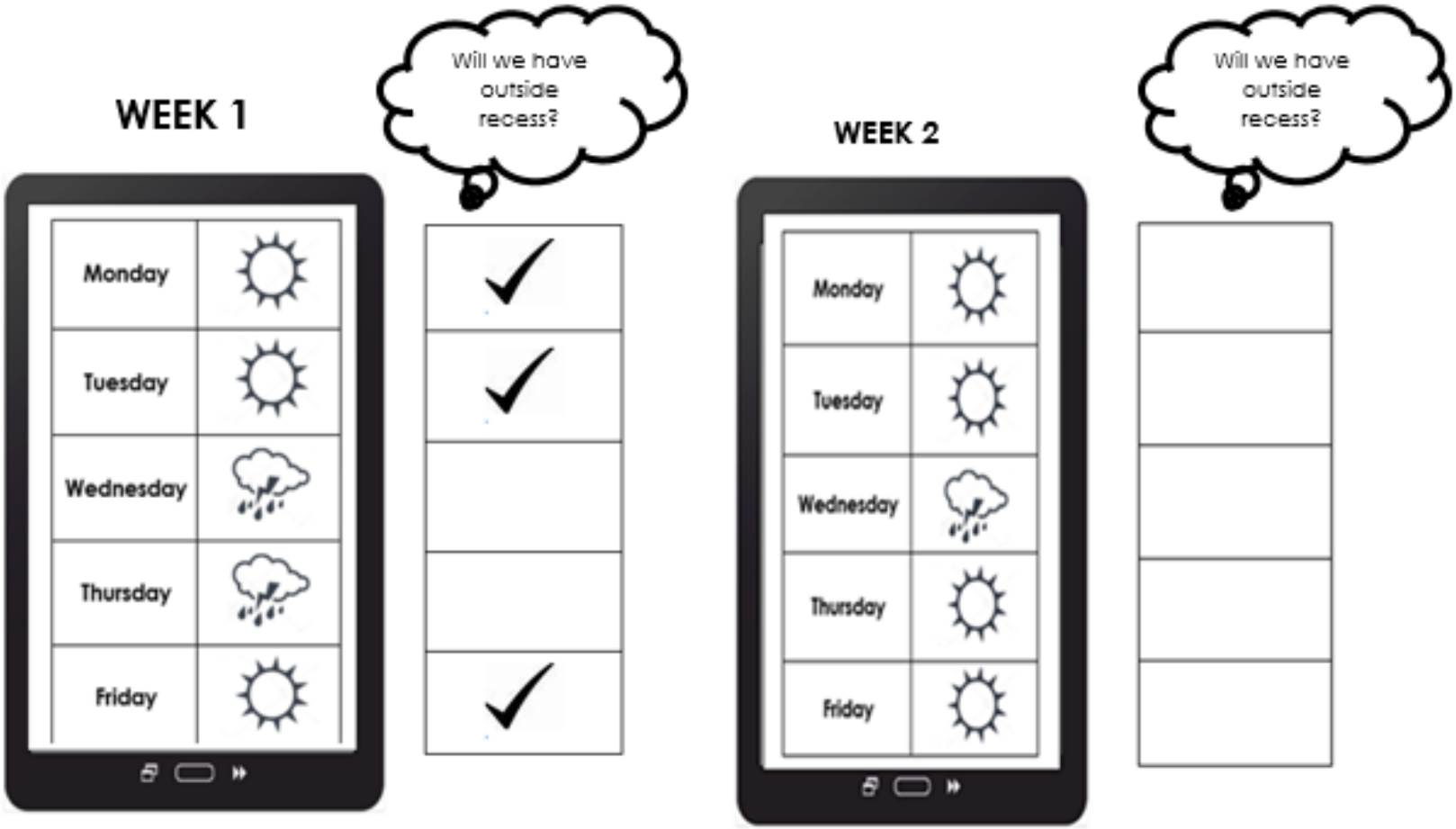
"Which week has more days with outside recess? Circle the chart that show more days of outside recess." *(Students will record the week showing more outside recess and provide an explanation for the pattern in weather changes and recess.)*

Pages 4-6: To be implemented individually. The task success criteria are based on this portion of the task.

- Week 3 – Students complete weather symbols
- Week 4 – students complete recess information based on weather symbol

Student Name_____

Complete the tables below using weather symbols and ✓. Think about what know about the relationship between the weather and recess after you complete the tables.



Look closely at the weather information in Week 1and Week 2.

Think about how the weather relates to recess? The pattern in the data is:

When it is  we play **inside** **outside**.

When it is  we play **inside** **outside**.

What causes you to stay inside?

What causes you to have outside recess?

How many days of outside recess are there each week?

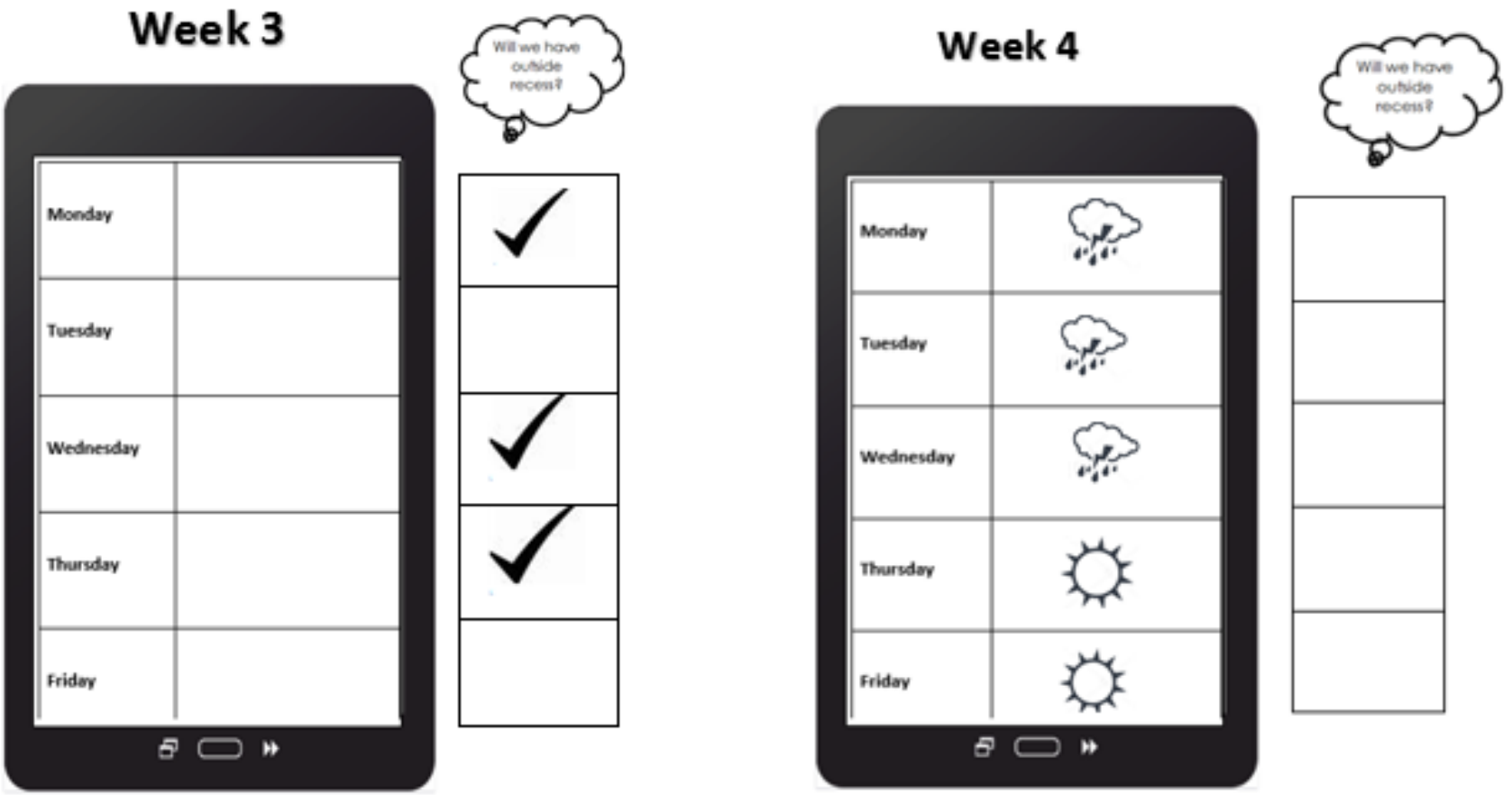
Week 1 has _____days of outside recess.

Week 2 has _____days of outside recess

Which week has more outside recess? Circle your answer.

Week 1 **Week 2** **Both have the same number**

Student Name_____



Complete the missing information for both weeks based on the pattern you observed in **Week 1** and **Week 2**.

Explain the relationship between the weather and type of recess that helped you complete the tables?

_____

_____

_____

Use counting to help you compare the number of days of outside recess in **Week 3** to the number of days of outside recess in **Week 4.**

Week 3 has _____ days of outside recess.

Week 4 has _____ days of outside recess

Which week has more days of outside recess? _____

Circle your answer.

Week 3 **Week 4** **They are the same.**

Optional page (not part of success criteria):

Student name_____ **Date**_____

Weather affects the things we do every day. We make choices based on the weather. Think about how weather affects if we go outside for recess or stay in.

We **stay inside for recess** because the weather _____

_____

_____

We **go outside for recess** because the weather _____

_____

_____