

## Grade K: Cited CCCs and their Bullets

**PATTERNS** In Grades K-2, children recognize that patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

- **Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1)**
- **Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1), (1-LS1-2), (1-LS3-1), (1-ESS1-1), (1-ESS1-2)**

**CAUSE AND EFFECT** In Grades K-2, students learn that events have causes that generate observable patterns. They design simple tests to gather evidence to support or refute their own ideas about causes.

- **Events have causes that generate observable patterns (K-ESS3-2), (K-ESS3-3), (K-PS3-1), (K-PS3-2), (2-LS2-1), (2-PS1-4)**
- **Simple tests can be designed to gather evidence to support or refute student ideas about causes. (K-PS2-1), (K-PS2-2), (1-PS4-1), (1-PS4-2), (1-PS4-3), (2-PS1-2)**

**SYSTEMS AND SYSTEM MODELS** In Grades K-2, students understand that objects and organisms can be described in terms of their parts and that systems in the natural and designed world have parts that work together.

- **Systems in the natural and designed world have parts that work together. (K-ESS2-2), (K-ESS3-1)**

**STRUCTURE AND FUNCTION** In Grades K-2, students observe that the shape and stability of natural and designed objects are related to their function(s).

- **The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2), (1-LS1-1), (2-LS2-2)**

## Dr. Art's Recommendations re CCCs in Kindergarten

**NOTE: Please read the Dr. Art recommendations for the K-2 Grade Span before reading the recommendations for this grade level.**

The two main cited CCCs in Kindergarten are **Cause and Effect**, and **Patterns**. As described below, a focus on these two CCCs will also readily apply to the other cited Kindergarten CCCs. These two CCCs are also particularly appropriate for Kindergarten since humans naturally see patterns in the world, and also try to explain the patterns in terms of what might be causing them.

For example, we notice that objects in sunlight are warmer than objects in the shade. We infer that the sun heats objects, which is also consistent with our own being heated or even “burned” by the sun. The most frequently cited Kindergarten Cause and Effect CCC bullet specifically makes the connection between the two CCCs: “Events have causes that generate observable patterns.”

Many children’s toys involve connecting smaller pieces together to make an object. They also naturally try to take apart objects in the natural and designed world. Two of the Kindergarten CCC citations focus on the **Systems and System Models** bullet that “systems in the natural and designed world have parts that work together.” This fundamental aspect of systems can also be considered as an example of a **Pattern**.

The Systems citations are associated with the Performance Expectations K-ESS2-2 and K-ESS3-1. Both of these Performance Expectations focus on organisms and the environments in which they live. If you use the term ecosystems, then the systems concept is naturally included. You may also choose to defer using the systems word, and instead refer to plants and animals in their environments or the places where they live.

Kindergarten also includes one citation for the CCC of **Structure and Function**: “The shape and stability of structures of natural and designed objects are related to their functions.” This CCC bullet is also an example of a **Pattern**. A bowl is round, a knife is sharp, and a fork has prongs. Each shape helps the object do what it is designed to do.

The best Kindergarten Performance Expectation for connecting with this **Structure and Function** CCC is K-PS3-2: “Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on an area.”