Grade 3: Cited CCCs and their Bullets

PATTERNS In grades 3-5, students identify similarities and differences in order to sort and classify natural objects and designed products. They identify patterns related to time, including simple rates of change and cycles, and use these patterns to make predictions.

- **Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)**
- **Patterns of change can be used to make predictions (3-LS1-1), (3-ESS2-1), (3-ESS2-2), (3-PS2-2)**

CAUSE AND EFFECT In grades 3-5, students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity might or might not signify a cause and effect relationship.

- **Cause and effect relations are routinely identified. (3-PS2-1),** (4-PS4-2)
- **Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1), (3-LS3-2), (3-LS4-2), (3-LS4-3),** (4-ESS3-1), (5-PS2-1)
- **Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1), (3-PS2-3),** (4-ESS2-1), (4-ESS3-2), (5-PS1-4)

SCALE, PROPORTION, AND QUANTITY In grades 3-5, students recognize that natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as weight, time, temperature, and volume.

- **Observable phenomena exist from very short to very long time periods. (3-LS4-1)**

SYSTEMS AND SYSTEM MODELS In grades 3-5, students understand that a system is a group of related parts that make up a whole and carry out functions its individual parts cannot. They can also describe a system in terms of its parts and their interactions.

- **A system can be described in terms of its components and their interactions.   (3-LS4-4),** (4-LS1-1), (4-LS1-2), (5-LS2-1), (5-ESS2-1), (5-ESS3-1)

Dr. Art's Recommendations re CCCs in Grade 3

NOTE: Please read the Dr. Art recommendations for the entire Grade 3-5 Span before reading the recommendation for this grade level.

Patterns and **Cause and Effect** are the two main CCCs that are cited throughout the K-2 Grade Span. This emphasis continues in Grade 3 where 12 out of the 14 citations are within these two CCCs. These two CCCs are still particularly appropriate for the third grade since humans naturally see patterns in the world, and also try to explain the patterns in terms of what might be causing them.

Patterns that are embedded in Grade 3 Performance Expectations and phenomena include life cycle changes (3-LS1-1); similarities and differences in family traits (3-LS3-1); weather across different times and locations (3-ESS2-1 and 3-ESS2-2); and an object's motion in different situations (3-PS2 performance expectations, especially 3-PS2-2). The Grade 3-5 span has different CCC bullets for **Patterns** than in the previous grades. Grade 3 Patterns bullets focus on using patterns to make predictions, and also initiate the use of Patterns within the grade span to sort and classify phenomena.

The main **Cause and Effect** CCC bullet in Grades 3-5 states: "Cause and effect relationships are routinely identified, tested, and used to explain change." In several instances the cited bullets omit some of the words and phrases, but this longer statement provides the goal for the grade and grade span. Grade 3 Cause and Effect contexts include animals forming groups to increase survival (3-LS2-1); environmental changes influencing organism traits (3-LS3-2); designing solutions to reduce the impact of weather hazards (3-ESS3-1); and changes that affect the motions of objects (3-PS2-1 through 3-PS2-4).

Grade 3 also includes the first citation for the CCC of **Scale, Proportion, and Quantity**, with the bullet stating that "Observable phenomena exist from very short to very long time periods." The cited context relates to the long time periods associated with fossils (3-LS4-1). This CCC is more fully cited and developed in Grade 5.

Grade 3 also includes one citation for the CCC of **Systems and System Models**. The cited bullet states that "a system can be described in terms of its components and their interactions." The cited context is a changing ecosystem, the effects of the changes on ecosystem organisms, and possible solutions to problems caused by these changes (3-LS4-4). This is a very appropriate context to begin analyzing system components and their interactions.